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ECONOMIC, SOCIAL AND CULTURAL SUPPLEMENT



June 1989

Powder River I Regional EIS

U.S. Department of the Interior
Bureau of Land Management
Miles City District Office

BLM-MT-ES-88-007-4121

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
MONTANA STATE OFFICE
222 NORTH 32ND STREET
P.O. BOX 36800
BILLINGS, MONTANA 59107-6800

TAKE PRIDE IN AMERICA

IN REPLY TO:

NOTICE

Enclosed is the draft Supplement to the Powder River I Regional Coal Environmental Impact Statement (DEIS). This Supplement has been prepared in response to Billings Federal District Court Order CV 82-116-BLG-JFB (October 1986) to assess the economic, social, and cultural impacts to the Northern Cheyenne Tribe from leasing Powder River I federal coal tracts in Montana.

The impact and mitigation portions of the Supplement should be read with the following understanding:

1. The impact analysis reflects impacts from three multitract leasing alternatives;

2. The Cook Mountain and Coal Creek tracts were the only "new mine" tracts actually sold in the 1982 sale. This reflects a lower level of potential development and, consequently environmental impacts, than any of the three leasing alternatives analyzed in the Supplement;

3. The mitigation section in the Supplement represents a collection of possible options for the decision-maker's consideration. These options were derived through meetings and discussions with various federal and state agencies, groups, organizations and most notably the Northern Cheyenne and Crow Tribal representatives. This array of possible mitigation measures does not constitute a consolidated mitigation strategy nor does it imply that all options are mutually compatible;

4. The wide array of mitigation options presented assumes involvement, either in concert or individually, by numerous organizations and agencies including county governments; Tribal governments; Montana Department of Highways; Montana Coal Board; U.S. Departments of Interior, Health and Human Services, and Housing and Urban Development; lessees; unions and community action groups, among others;

5. Implementation of several mitigation options, whether at the Tribal, local, county, state, or federal level, would require substantial fiscal resources. Implementation of these options would, therefore, depend upon the availability of funds and the priority the implementing agency places on using those funds for mitigation purposes; and

6. The Powder River I leases were bid on and issued without the current level of knowledge regarding social/economic impacts or assessment of mitigation possibilities. The implications of imposing mitigation measures at this time would have to be considered by the Secretary.

Your review and comments regarding this Draft are invited. Please direct your written comments to Loren Cabe, EIS Project Manager, Bureau of Land Management, 222 North 32nd Street, P.O. Box 36800, Billings, Montana 59107.

Public hearings on the Draft will be held during the latter part of the 60-day comment period. A future FEDERAL REGISTER Notice will announce the location and times of the public hearings.

Please retain your copy of the DEIS. Portions of this document will not be reprinted in the FEIS if changes on that particular section are minor.

Sincerely,

Marvin LeNoue

Marvin LeNoue
State Director

MONTANA PORTION
OF THE
POWDER RIVER COAL REGION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

(X) Draft ( ) Final

Lead Agency: U.S. Department of the Interior, Bureau of Land Management

Cooperating Agency: U.S. Department of the Interior, Bureau of Indian Affairs

Type of Action

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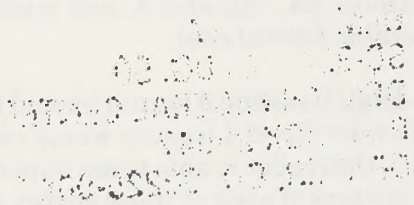
2. Abstract

This Supplement assesses the economic, social, and cultural impacts to the Northern Cheyenne and Crow Tribes from leasing three different combinations of federal coal tracts in the Powder River Coal Region of Montana. These are designated as Leasing Alternatives 2A, 2B, and 4, and contain 567 million, 389 million, and 816 million tons, respectively, of recoverable federal coal.

The Supplement also contains two "no-action" alternatives: the High Baseline Alternative and the Low Baseline Alternative. Both of these baselines assume that no Powder River I leasing would occur. By presenting two different possible energy futures for the study area, the reader is able to see impacts from the three Powder River I federal coal leasing alternatives in the context of each of those energy futures. The High Baseline Alternative includes existing power plants and coal mines in the study area plus the following five privately proposed projects, none of which involve leasing of Powder River I federal coal: Montco coal mine, CX Ranch coal mine, Greenleaf-Miller coal mine, Wolf Mountain coal mine, and the Tongue River Railroad. The Low Baseline includes only existing power plants and mines in the study area.

This Draft will receive a 60-day public review. Written comments must be sent to the Project Manager at the address listed below. For further information regarding this Supplement contact:

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SEPTEMBER 1988

Marvin LeNoue

Marvin LeNoue
State Director

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TABLE OF CONTENTS

CHAPTER 1 — PURPOSE AND NEED 1

CHAPTER 2 — SUMMARY COMPARISON OF IMPACTS AMONG THE LEASING ALTERNATIVES

2.1 Introduction 9
2.2 Summary of Alternatives 9
2.21 High Baseline Alternative 10
2.22 Low Baseline Alternative 16
Leasing Alternatives 17
2.23 Leasing Alternative 2A 17
2.24 Leasing Alternative 2B 20
2.25 Leasing Alternative 4 28

CHAPTER 3 — AFFECTED ENVIRONMENT

3.1N Northern Cheyenne Reservation 35
3.1C Crow Reservation 61

CHAPTER 4 — ENVIRONMENTAL CONSEQUENCES (Measured Against High Baseline Alternative)

4.1 High Baseline Alternative 73
4.1N Northern Cheyenne Reservation 74
4.1C Crow Reservation 87
4.2 Impacts of Leasing Alternatives (2A, 2B, 4) 92
4.2N Northern Cheyenne Reservation 95
4.2C Crow Reservation 117
4.3 Mitigation 125
4.31 Mitigation by Objective 126
4.32 Mitigation Proposals from Northern Cheyenne 138
4.4 Short-Term Uses, Long-Term Productivity, Irreversible Resource Commitments, and Unavoidable Adverse Impacts 141

CHAPTER 4A — ENVIRONMENTAL CONSEQUENCES (Measured Against Low Baseline Alternative)

4A.1 Low Baseline Alternative 143
4A.1N Northern Cheyenne Reservation 144
4A.1C Crow Reservation 151
4A.2 Impacts of Leasing Alternatives (2A, 2B, 4) 154
4A.2N Northern Cheyenne 156
4A.2C Crow 176
4A.3 Mitigation 182
4A.4 Short-Term Uses, Long-Term Productivity, Irreversible Resource Commitments, and Unavoidable Adverse Impacts 182

CHAPTER 5 — CONSULTATION AND COORDINATION 183

CHAPTER 6 — LIST OF PREPARERS 191

APPENDICES

Appendix A: Billings District Court Orders 193
Appendix B: Tract Profile Package 249
Appendix C-1: Northern Cheyenne Tribe's Proposed Stipulations 299
Appendix C-2: Full Text of Cultural Mitigation 305
Appendix C-3: Quantification of Mitigation Options 307

BIBLIOGRAPHY 309

FIGURES

Chapter 1

Figure 1-1 Powder River Coal Region 2

Chapter 2

Figure 2-1 High and Low Baseline Population Forecasts — Northern Cheyenne Reservation 12
Figure 2-2 High and Low Baseline Population Forecasts — Crow Reservation 15
Figure 2-3 Employment Forecasts — Leasing Alternatives 2B and 4 with High Baseline — Northern Cheyenne Reservation 22
Figure 2-4 Employment Forecasts — Leasing Alternatives 2B and 4 with Low Baseline — Northern Cheyenne Reservation 23
Figure 2-5 Population Forecasts — Leasing Alternatives 2B and 4 with High Baseline — Northern Cheyenne Reservation 24
Figure 2-6 Population Forecasts — Leasing Alternatives 2B and 4 with Low Baseline — Northern Cheyenne Reservation 25
Figure 2-7 Forecasted Needed Increases in Major Service Expenditures — Leasing Alternatives 2B and 4 with High Baseline — Northern Cheyenne Reservation 26
Figure 2-8 Forecasted Needed Increases in Major Service Expenditures — Leasing Alternatives 2B and 4 with Low Baseline — Northern Cheyenne Reservation 27
Figure 2-9 Employment Forecasts — Leasing Alternatives 2B and 4 with High Baseline — Crow Reservation ... 29
Figure 2-10 Employment Forecasts — Leasing Alternatives 2B and 4 with Low Baseline — Crow Reservation ... 30
Figure 2-11 Population Forecasts — Leasing Alternatives 2B and 4 with High Baseline — Crow Reservation 31
Figure 2-12 Population Forecasts — Leasing Alternatives 2B and 4 with Low Baseline — Crow Reservation 32

Chapter 3

Figure 3-1 Map of Northern Cheyenne Indian Reservation 35
Figure 3-2 Reservation District Map 39
Figure 3-3 Spiritual Characteristics of the Universe 55
Figure 3-4 Earth Surface Dome 57
Figure 3-5 Map of Crow Indian Reservation 62

Chapter 4

Figure 4-1 Map of Northern Cheyenne Indian Reservation 94
Figure 4-2 Map of Crow Indian Reservation 116

TABLES

Chapter 1

Table 1-1 Montana Tract Ranking — Powder River I 3
Table 1-2 Powder River I Coal Tract Data — Montana Tracts 5
Table 1-3 Alternatives — Powder River I Supplemental EIS 6

Chapter 2

Table 2-1 Powder River I Leasing Alternatives Containing Montana Tracts 9
Table 2-2 Tract Locations 10
Table 2-3 High and Low Forecasted Baseline Values (No Round 1 Federal Leasing) — Northern Cheyenne Reservation 11
Table 2-4 Baseline Comparison Summary — Percentage Change From 1987 Levels — Northern Cheyenne Reservation 13
Table 2-5 Leasing Alternative Impact Summary — Total Change From Each Baseline — Northern Cheyenne Reservation 18
Table 2-6 Summary of Impacts From Leasing Alternatives — Percentage Change Over Each Baseline — Northern Cheyenne Reservation 19

Chapter 3

Table 3-1 Employment by Industry — Northern Cheyenne Reservation Residents — 1980 35
Table 3-2 Population Growth — Montana Portion Powder River Region 37
Table 3-3 Population of Adjacent Communities — Northern Cheyenne Reservation — 1987 38
Table 3-4 Northern Cheyenne Tribal Income — 1980-1986 41
Table 3-5 Northern Cheyenne Tribal Expenditures — 1980-1986 42
Table 3-6 Employment by Industry — Crow Reservation Residents— 1980 61

Chapter 4

Table 4-1 High Baseline Projects 73
Table 4-2 Changes in Direct Employment — Employees Residing on Reservation — High Baseline Alternative — Northern Cheyenne Reservation 74
Table 4-3 Changes in Total Employment — Employees Residing on Reservation — High Baseline Alternative — Northern Cheyenne Reservation 74
Table 4-4 Total Population — High Baseline Alternative — Northern Cheyenne Reservation 75
Table 4-5 Community-Specific Population Change — High Baseline Alternative — Northern Cheyenne Reservation 75
Table 4-6 Population Change — Communities Adjacent to the Northern Cheyenne Reservation — High Baseline Alternative 76
Table 4-7 Household Income and Business Activity — High Baseline Alternative — Northern Cheyenne Reservation 76
Table 4-8 Population Totals — High Baseline Alternative — Northern Cheyenne Reservation 78
Table 4-9 Changes in Facilities/Services — High Baseline Alternative — Northern Cheyenne Reservation 79
Table 4-10 Additional Service Expenditures Needed — High Baseline Alternative — Northern Cheyenne Reservation 80
Table 4-11 Increases in Road Use — High Baseline Alternative — Northern Cheyenne Reservation 83
Table 4-12 Projected Population — High Baseline Alternative — Crow Reservation 87
Table 4-13 Population Change — Communities Adjacent to the Crow Reservation — High Baseline Alternative 87
Table 4-14 Tract Information — By Alternative 93
Table 4-15 Changes in Direct Employment — Employees Residing on Reservation — Northern Cheyenne Reservation 95
Table 4-16 Employment of Reservation Residents — Northern Cheyenne Reservation 96
Table 4-17 Total Population — Northern Cheyenne Reservation 96
Table 4-18 Community-Specific Population Change — Leasing Alternative 2A — Northern Cheyenne Reservation 97
Table 4-19 Community-Specific Population Change — Leasing Alternative 2B — Northern Cheyenne Reservation 98
Table 4-20 Community-Specific Population Change — Leasing Alternative 4 — Northern Cheyenne Reservation 98
Table 4-21 Population Change — Communities Adjacent to Northern Cheyenne Reservation 99
Table 4-22 Household Income and Business Activity — Northern Cheyenne Reservation 99
Table 4-23 Population Totals Summary — Northern Cheyenne Reservation — 2005 102
Table 4-24 Changes in Facilities/Services — Alternative 2A — Northern Cheyenne Reservation 103
Table 4-25 Changes in Facilities/Services — Leasing Alternative 2B — Northern Cheyenne Reservation 104
Table 4-26 Changes in Facilities/Services — Leasing Alternative 4 — Northern Cheyenne Reservation 105
Table 4-27 Additional Service Expenditures Needed — Northern Cheyenne Reservation — 2005 106
Table 4-28 Increases in Road Use — Leasing Alternative 2A — Northern Cheyenne Reservation 109
Table 4-29 Increases in Road Use — Leasing Alternative 2B — Northern Cheyenne Reservation 110
Table 4-30 Increases in Road Use — Leasing Alternative 4 — Northern Cheyenne Reservation 110
Table 4-31 Changes in Impact Factors — Social Organization — Northern Cheyenne Reservation — 2005 112
Table 4-32 Changes in Direct Employment — Employees Residing on Reservation — Crow Reservation 117
Table 4-33 Employment of Reservation Residents — Crow Reservation 118
Table 4-34 Population Change — Communities Adjacent to Crow Reservation 118
Table 4-35 Changes in Impact Factors — Social Organization — Crow Reservation — 2005 123
Table 4-36 Forecasted Montana Coal Severance Taxes and Federal Coal Royalties 125

Chapter 4A

Table 4A-1 Projected Population — Low Baseline Alternative — Northern Cheyenne Reservation 144
Table 4A-2 Total Household Income and Business Activity — Low Baseline Alternative — Northern Cheyenne Reservation 144
Table 4A-3 Changes in Facilities/Services — Low Baseline — Northern Cheyenne Reservation 146
Table 4A-4 Additional Service Expenditures Needed — Low Baseline Alternative — Northern Cheyenne Reservation —2005 147
Table 4A-5 Projected Population — Low Baseline Alternative — Crow Reservation 151
Table 4A-6 Tract Information by Alternative 155
Table 4A-7 Changes in Direct Employment — Employees Residing on Reservation — Northern Cheyenne Reservation 156

Table 4A-8 Employment of Reservation Residents — Northern Cheyenne Reservation 157
Table 4A-9 Total Population — Northern Cheyenne Reservation 157
Table 4A-10 Community-Specific Population Change — Leasing Alternative 2A — Northern Cheyenne Reservation 158
Table 4A-11 Community-Specific Population Change — Leasing Alternative 2B — Northern Cheyenne Reservation 158
Table 4A-12 Community-Specific Population Change — Leasing Alternative 4 — Northern Cheyenne Reservation 159
Table 4A-13 Population Change — Communities Adjacent to Northern Cheyenne Reservation 159
Table 4A-14 Household Income and Business Activity — Northern Cheyenne Reservation 160
Table 4A-15 Population Totals — Northern Cheyenne Reservation — 2005 162
Table 4A-16 Changes in Facilities/Services — Leasing Alternative 2A — Northern Cheyenne Reservation 163
Table 4A-17 Changes in Facilities/Services — Leasing Alternative 2B — Northern Cheyenne Reservation 164
Table 4A-18 Changes in Facilities/Services — Leasing Alternative 4 — Northern Cheyenne Reservation 165
Table 4A-19 Additional Service Expenditures Needed — Northern Cheyenne Reservation — 2005 167
Table 4A-20 Increases in Road Use — Leasing Alternative 2A — Northern Cheyenne Reservation 170
Table 4A-21 Increases in Road Use — Leasing Alternative 2B — Northern Cheyenne Reservation 171
Table 4A-22 Increases in Road Use — Leasing Alternative 4 — Northern Cheyenne Reservation 171
Table 4A-23 Changes in Impact Factors — Social Organization — Northern Cheyenne Reservation — 2005 173
Table 4A-24 Changes in Direct Employment — Employees Residing on Reservation — Crow Reservation 176
Table 4A-25 Employment of Reservation Residents — Crow Reservation 177
Table 4A-26 Population Change — Communities Adjacent to Crow Reservation 177
Table 4A-27 Changes in Impact Factors — Social Organization — Crow Reservation — 2005 182

LIST OF ACRONYMS

AFDC	Aid for Families with Dependent Children
AITS	American Indian Technical Services
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CHCC	Crow Historical and Cultural Commission
CHS	Contract Health Services
CT-ONR	Crow Tribe Office of Natural Resources
DKMC	Dull Knife Memorial College
DUI	Driving Under the Influence of Intoxicants
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FTE	Full-time Equivalent
FY	Fiscal Year
HIP	Housing Improvement Program
HUD	Housing and Urban Development
I/O	Input/Output
IHS	Indian Health Service
LIEAP	Low Income Energy Assistance Program
LRD/NCT	Language Research Department of the Northern Cheyenne Title VII ESEA Bilingual Education Program
MFP	Management Framework Plan
NCHA	Northern Cheyenne Housing Authority
NCPO	Northern Cheyenne Planning Office
NOI	Notice of Intent
RCT	Regional Coal Team
TERO	Tribal Employment Rights Office
TIR	Tract Impact Report
TPP	Tract Profile Package
WIC	Women, Infants, and Children Program

CHAPTER 1
PURPOSE AND NEED

1.1 INTRODUCTION

This Powder River I Supplemental Environmental Impact Statement (EIS) is in response to the decisions and orders of the U.S. District Court for the District of Montana in *Northern Cheyenne Tribe* v. *Hodel, et al.*, (Civil No. 82-116-BLG-JFB), issued May 28, 1985, and October 6, 1986 (see Appendix A). The 1986 order suspended two leases issued in Montana as part of the 1982 Powder River Round I coal sale. The order allowed operations to continue on leases M54711 — Colstrip A & B, M54712 — Colstrip C, and M54713 — Colstrip D, pending completion of an economic, social, and cultural Supplemental EIS by the Bureau of Land Management (BLM). Federal coal tracts in Wyoming were not included in the court orders and are not included in this analysis.

This Supplement corrects the deficiencies in the 1981 *Final Powder River Regional Coal Environmental Impact Statement* (Powder River I FEIS) by addressing the possible economic, social, and cultural impacts to the Northern Cheyenne Tribe and Reservation from development of Powder River Round I federal coal leases in Montana. The analysis of impacts on other resources is contained in the Powder River I FEIS; it was not determined by the Court to require supplemental analysis. The Crow Tribe and Reservation are also included in this Supplement because of proximity to the Round I federal coal tracts and the possible impacts from that development.

In 1985, Montana BLM initiated a large data collection and analysis effort to ensure the availability of comprehensive social and economic information on the Crow and Northern Cheyenne Tribes and Reservations. In that year, BLM contracted for a major social and economic data collection effort on the Northern Cheyenne Reservation. That report, "Social and Economic Effects of Coal Development on the Northern Cheyenne Tribe," (Feeney, et al., 1986), provides information on how economic and social conditions have changed on the Reservation from 1970 to 1985; the study was done with the cooperation of the Northern Cheyenne Tribe and supplements information already available for the Crow Reservation. That information, along with additional information gathered from both Tribes, has been used as an integral part of this EIS Supplement.

In 1986, BLM contracted for an indepth data collection project on the economic relationships within the Crow and Northern Cheyenne Reservations. Information was also included on the economic interactions between both Reservations and the rest of the six-county Powder River Region of Montana (Feeney, 1987). That information, known as input/output (I/O) data, was then used in the Montana BLM I/O computer model. This model allows BLM to assess the economic changes likely on each Reservation resulting from off-Reservation economic development. It is a powerful tool in determining the likely economic changes on each Reservation and in the overall six-county area that could result from federal coal leasing in the Montana portion of the Powder River coal region. See Technical Report 1 for more detail on the I/O model and the I/O data collection effort on both Reservations. All the Technical Reports mentioned in this Supplement are available from the Miles City District Office.

In the spring of 1987, BLM completed a computerized model designed to forecast the likely residence patterns of incoming population among communities in the study area. This type of model, known as a gravity model, is used in this Supplement to forecast community population levels under different coal leasing scenarios. See Technical Report 2 for greater detail on the gravity model.

The BLM held scoping meetings on both the Northern Cheyenne and Crow Reservations in April 1987 to determine the issues and concerns on the Reservations. That process is described in greater detail in Chapter 5, "Consultation and Coordination." In September 1987, BLM awarded a contract to analyze likely cultural effects on the Northern Cheyenne and Crow Reservations from off-Reservation federal coal leasing. That contract involved contacting and interviewing cultural leaders on both Reservations. The need for this additional information became evident during the EIS scoping meetings held on each Reservation in April 1987. The results of that study are incorporated into this Supplement.

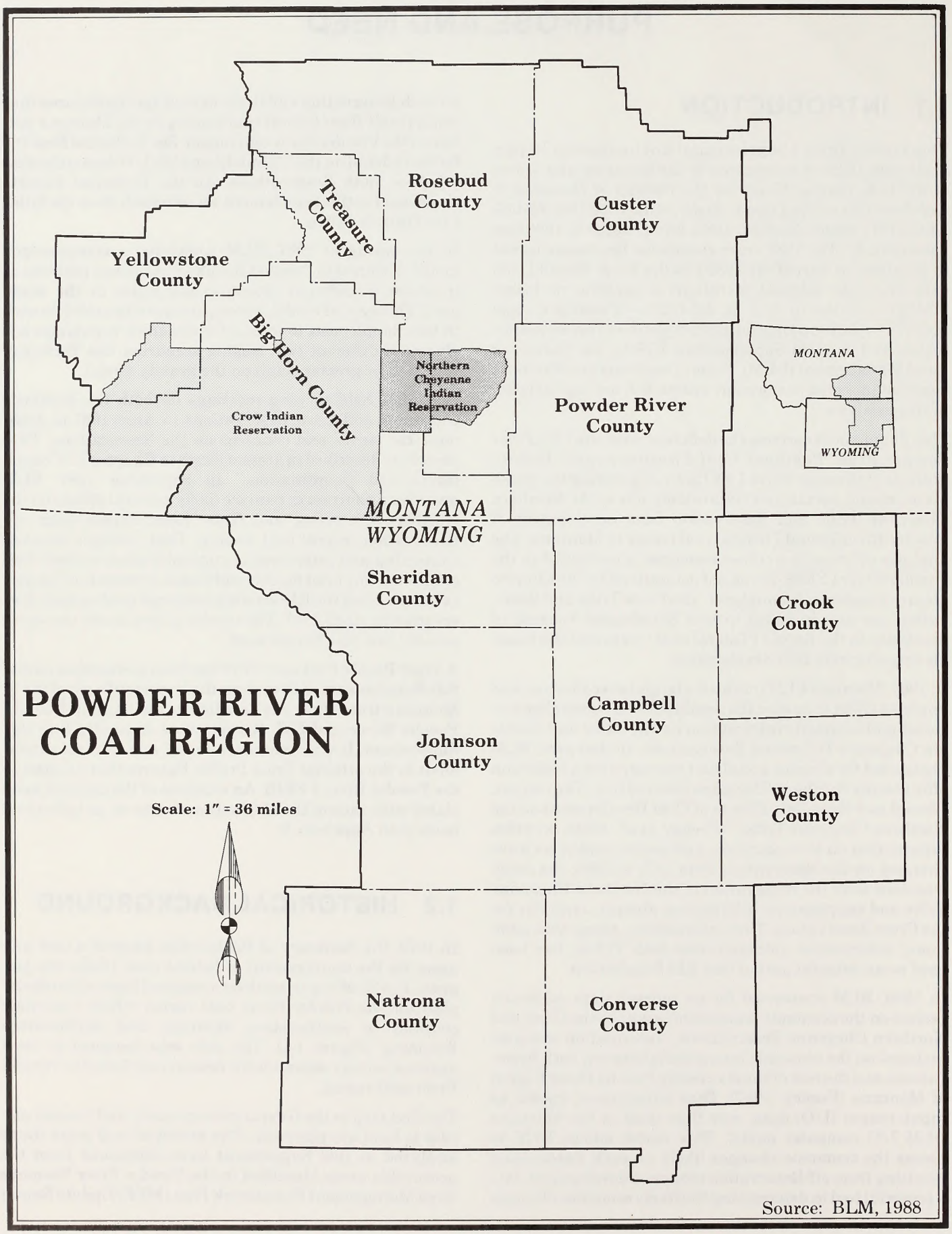
A Tract Profile Package (TPP) has been prepared as part of this Supplemental EIS to show the impacts of each of the 11 Montana tracts that were studied in the original Round I Powder River coal EIS. It appears as Appendix B in this Supplement. It is an economic, social, and cultural supplement to the original Tract Profile Reports that are part of the Powder River I FEIS. An analysis of the impacts associated with each of the 11 Montana tracts on an individual basis is in Appendix B.

1.2 HISTORICAL BACKGROUND

In 1979, the Secretary of the Interior adopted a new program for the management of federal coal. Under the program, the BLM began work on a regional lease sale activity plan for the Powder River coal region which comprises counties in southeastern Montana and northeastern Wyoming (Figure 1-1). The sale was designed to meet national energy demands for federal coal from the Powder River coal region.

The first step in the federal government's coal leasing process is land use planning. The potential coal lease tracts analyzed in this Supplement were delineated from the acceptable areas identified in the Powder River Resource Area Management Framework Plan (MFP) Update Report

Figure 1-1



Source: BLM, 1988

(July 1979). This document updated three underlying land use plans; the South Rosebud, Coalwood, and Decker-Birney MFPs. Acceptable areas were identified by applying four "screens" to federal lands: high or moderate coal development potential, unsuitability criteria (43 CFR 3460), multiple land use decisions, and surface owner consultation. As a result of the unsuitability assessment, some coal areas were dropped from further consideration for leasing. The adequacy of the land use planning was upheld in the companion lawsuit, *National Wildlife Federation* v. *Burford*, Civil No. 82-117(D. Montana September 3, 1985, September 22, 1987), *appeal pending* No. 87-4375 (Ninth Circuit).

After the completion of land use planning, BLM called for expressions of leasing interest for those areas found acceptable for further consideration. Information provided in response to this call included area of interest, desired tonnages, and proposed mining method (surface or subsurface).

Expressions of interest and other geologic and mining information were used to delineate federal coal tracts for potential leasing under the guidance of the Powder River Regional Coal Team (RCT). That team is composed of BLM officials, two Governor's representatives (one each from Montana and Wyoming), and several "ex officio" members. Currently, the BLM Wyoming State Director is the Chairman of the Powder River Regional Coal Team. However, in 1982 the chairman was the BLM Idaho State Director.

Individual tract delineation reports were prepared which provided pertinent coal resource and mining information. Those delineations were upheld in the *National Wildlife Federation* decision. This information was used to develop a site specific environmental analysis for each tract. Environmental, social, and economic factors pertinent to or affected by development of each tract were included in these analyses. The original Round I Tract Profile Reports were then prepared which summarized the tract delineation report and included impacts determined to be significant or controversial in the site specific analyses. Appendix B presents tract-specific economic, social, and cultural impacts for each of the 11 tracts.

The Powder River Regional Coal Team developed tract ranking factors for use in the Powder River I FEIS. Based on that tract ranking process, which considered coal data, environmental data, and socioeconomic data, each of the 24 Powder River I coal tracts were designated as having low, medium, or high "desirability of leasing." Eleven of those 24 tracts are in Montana; the remainder are in Wyoming. Table 1-1 shows the ranking for the 11 Montana tracts based on socioeconomic factors. These rankings also reflect "desirability of leasing." The overall ranking is also shown; it is a composite of the rankings for coal, socioeconomic, and environmental factors. The Powder River Regional Coal Team then grouped the 24 Montana and Wyoming tracts into 7 leasing alternatives for study in a regional coal EIS. Table 2-1, Chapter 2 in the Powder River I FEIS, shows which of the 11 Montana tracts are contained in the 7 leasing alternatives studied in the original Powder River Round I EIS.

Each of the seven leasing alternatives were analyzed for impacts, and a draft Powder River I EIS was published in July 1981. Public comments on the draft were incorporated, and the FEIS was issued in December 1981. Of the 24 tracts studied in the Powder River I FEIS, the Secretary of the Interior, after consultation with the Governors of both Montana and Wyoming, approved the offering of 14 federal coal tracts, 8 of which were in the Montana portion of the Powder River Region (Table 1-1).

In April and October 1982, the Department of the Interior held the Powder River Round I federal coal lease sale. Bids were received on six of the eight Montana leases offered. Of these six bids, all six were accepted as representing fair market value, however, only five of the six leases were

TABLE 1-1
MONTANA TRACT RANKING — POWDER RIVER I

Tract	Socioeconomic Ranking[1]	Overall Ranking[1]	Offered for Sale	Bid	
				Received	Accepted
Colstrip A & B	Medium-high	High	Yes	Yes	Yes
Colstrip C	Medium-high	High	Yes	Yes	Yes
Colstrip D	Medium-high	High	Yes	Yes	Yes
Spring Creek	High	High	Yes	No	
North Decker	Medium	High	Yes	No	
West Decker	Medium	High	Yes	Yes	Yes
Cook Mountain	Low	Medium	Yes	Yes	Yes
Coal Creek	Low-medium	Medium	Yes	Yes	Yes[2]
Decker-Birney (Ashland)	Low	Medium	No		
Northwest Otter Creek	Low	Medium	No		
Southwest Otter Creek	Low	Medium	No		

[1] As recommended by the Powder River RCT on October 2, 1981. Rankings indicate "desirability of leasing."
[2] The Coal Creek lease has not been issued.

Source: BLM, MSO Division of Mineral Resources, 1987.

issued. (See Table 1-1.) The Coal Creek tract lease was never issued because of an appeal on the small business tract status, surface owner consent problems, and the court actions described in this chapter.

Shortly before the April 1982 federal coal sale offering, the Northern Cheyenne Tribe filed suit in U.S. District Court for the District of Columbia against the Secretary of the Interior alleging that the Powder River I FEIS did not consider the sale's effects on the Tribe or Reservation. After denying the Tribe's request to issue a temporary restraining order to stop the sale, the Court transferred the case to the U.S. District Court for the District of Montana.

On May 28, 1985, the Montana District Court determined that the Department of the Interior had not complied with applicable federal law during the leasing process. In particular, the Court found that the Round I FEIS was flawed because of its lack of: (A) economic, social, and cultural impact analysis specific to the Northern Cheyenne Tribe and Reservation, and (B) discussion on ways to mitigate such effects. In the Order that accompanied the May 28, 1985, decision, the Court directed the Secretary to cancel the Montana leases which BLM had issued in 1982 as part of the Powder River Round I federal coal lease sale.

In response to that Order, the Department of the Interior, along with Western Energy, Thermal Resources, and Wesco (three of the four successful bidders) requested the District Court to reconsider the relief granted in the May 28, 1985 opinion. The United States and the lessees contended that invalidating the Montana leases was an extreme remedy which was not justified in light of the Court's failure to balance the equities involved before it granted relief. The five issued leases involved were: Colstrip A and B, Colstrip C, Colstrip D, West Decker, and Cook Mountain.

The motion to amend was considered and granted by the Court in an October 6, 1986, Opinion and Order. In the 1986 Order, the Court rescinded the portion of the 1985 Order that had directed cancellation of the Montana leases. The Court allowed operations to continue on "maintenance" tracts Colstrip A and B (M54711), Colstrip C (M54712), and Colstrip D (M54713). These maintenance tracts, recently reclassified as "expansion/extension" tracts under the revised Federal Coal Management program adopted by the Secretary of the Interior in February 1986, are federal coal tracts that are offered for lease by BLM in the area of an existing coal mine. Such leases hold sufficient recoverable reserves to allow a coal company to continue mining operations into the future at existing production levels or to expand annual production if market conditions warrant. The Court also provided for halting mining on these three expansion/extension leases if that mining is shown to cause significant socioeconomic impacts. Finally, the Court suspended the remaining Montana leases that were issued (Cook Mountain and West Decker) until this Supplement to the Powder River I FEIS is prepared. The Northern Cheyenne Tribe has appealed the October 6, 1986, decision to the Ninth Circuit Court of Appeals.

The October 6 Order concludes that the Secretary shall reconsider whether the five Montana leases (the Cook Mountain new mine tract and the West Decker, Colstrip A & B (M54711), Colstrip C (M54712), and Colstrip D (M54713) expansion/extension tracts) should have been issued and whether additional mitigating measures should be imposed. The Secretary will do so upon completion of this Supplement.

1.3 ISSUES AND AREAS OF CONCERNS

The majority of concerns expressed on both Reservations at the scoping meetings held as part of this Supplemental EIS fell in the areas of social concerns (including services), concerns about the impacts on belief and value systems and impacts to the physical environment. Chapter 5, "Consultation and Coordination," discusses the scoping process in greater detail.

1.4 TRACT DEFINITIONS AND BASELINE/LEASING ALTERNATIVES

Prior to summarizing and comparing impacts, it is important to explain two concepts that are necessary to understand the analysis in this Supplement. The two concepts are: (A) how tracts are defined, in terms of "expansion/extension" and "new mine" tracts, and (B) the difference between the terms "baseline alternatives" and "leasing alternatives."

Tracts

This Supplement analyzes 11 federal coal tracts in Montana that were studied as part of the Powder River Round I FEIS. Those 11 tracts are divided into two categories: six "expansion/extension" tracts and five "new mine" tracts. This is the same grouping that was used in the original Round I FEIS. These 11 tracts, grouped into these 2 categories, are described in greater detail in Table 1-2. The reader should note that the tract term "expansion/extension" was adopted as part of the Secretary's February 21, 1986, program decision and is used in place of the term "maintenance" throughout this Supplement.

A. Expansion/Extension Tracts —

These federal coal tracts are located in the area of an existing mine. As the name suggests, this type of federal tract is designed to contain only sufficient recoverable reserves to enable an existing mining operation to expand annual coal production and/or extend the mine's life. Because these tracts lie within the mining areas of an existing operation, the economic and social impacts from leasing an expansion/extension tract are usually much less than those associated with opening a new mine. With an existing mine, the dragline has already been constructed and is usually operating, the road network is in place, the coal

TABLE 1-2
POWDER RIVER I COAL TRACT DATA — MONTANA TRACTS

Tracts	Coal Ownership (Acres)					Recoverable Reserves (Millions of Tons)			
	Federal Unleased	Federal Leased	State	Private	Total	Federal Unleased	State	Private	Total
Expansion/Extension Tracts									
Colstrip A&B	1,632	2,240	280	3,613	7,765	21	2	56	138
Colstrip C	893	1,586	640	3,604	6,723	21	14	85	168
Colstrip D	2,250	0	0	2,811	5,061	42	0	54	96
North Decker	1,431	1,850	0	0	3,281	66	0	0	133
Spring Creek	658	2,365	640	0	3,663	35	37	0	355
West Decker	40	3,040	640	0	3,720	5	36	0	184
SubTotal	6,904	11,081	2,200	10,028	30,213	190	89	195	1,074
New Mine Tracts									
Decker-Birney (Ashland)	1,949	0	640	2,939	5,528	119	56	203	378
Coal Creek	1,032	0	320	1,935	3,287	60	11	93	164
Cook Mountain	2,096	0	80	1,391	3,567	178	0	76	254
Northwest Otter Creek	1,350	0	640	3,484	5,474	139	62	210	411
Southwest Otter Creek	1,821	0	1,185	4,344	7,350	130	50	219	399
SubTotal	8,248	0	2,865	14,093	25,206	626	179	801	1,606
Total	15,152	11,081	5,065	24,121	55,419	816	268	996	2,680

Source: BLM, Montana State Office, Division of Mineral Resources, 1987

handling facilities have been built, and the basic operations crew is already at work in the mine area. In other words, few, if any, increases in employment, payroll, or annual coal production are expected with these tracts, because the coal in the tracts would be mined as the dragline worked its way through the mine area.

B. New Mine Tracts —

These federal coal tracts contain sufficient recoverable reserves to permit the opening of an entirely new coal mine. They are in areas where no existing mines are nearby. In these tracts, the federal recoverable reserves are usually larger than expansion/extension tracts and, in the Powder River Region, are scaled to allow production of several million tons a year for 25 to 40 years. Because these tracts would result in new mines, they usually create a greater breadth and magnitude of social and economic impacts than do expansion/extension tracts because of the large increase in production, employment, and payroll associated with them.

Alternatives

This Supplement contains five alternatives that are separated into two major categories: two "baseline alternatives" (High and Low) and three "leasing alternatives" (2A, 2B, and 4). The baseline alternatives are the "no action" alternatives for this Supplemental EIS, while the leasing alternatives involve leasing of Powder River I federal coal. These five alternatives and the coal activity associated with each are shown in Table 1-3.

A. Baseline Alternatives —

The BLM has presented two baseline, or "no action," alternatives in this Supplement because of uncertainties about future baseline energy development in the Powder River Region of Montana; both baselines assume no additional Powder River Round I federal coal leasing. These two baselines are designated the "High Baseline Alternative" and "Low Baseline Alternative" and are described below. Either of these baselines (or a level of development somewhere between the two) could occur without the leasing of any additional Round I federal coal.

High Baseline Alternative ("No Action")

This is the baseline that was used in the original Powder River I FEIS. It includes the existing five Montana coal mines and four electric power generators (see Table 1-3) plus the following five proposed projects in the area: the Montco coal mine, CX Ranch coal mine, Greenleaf-Miller coal mine, Wolf Mountain coal mine, and the Tongue River Railroad. These four coal mines and the railroad are private ventures that are not dependent on Powder River I federal coal to operate. Map 1 (map packet) shows the locations of the existing and proposed High Baseline projects. The High Baseline Alternative is an optimistic development scenario because it assumes that these proposed private projects would be implemented in the future. Future Montana coal market conditions will, to a great extent, determine whether these five projects are built between now and the year 2005. It is reasonable to expect that market conditions would have to improve over 1988 levels before these projects would be implemented.

TABLE 1-3
ALTERNATIVES — POWDER RIVER I
SUPPLEMENTAL EIS

BASELINE ALTERNATIVES
("No Action" Alternatives)

HIGH BASELINE ALTERNATIVE

Existing Montana Coal Mines and Power Plants

Absaloka Mine (Westmoreland Coal Company)
Big Sky Mine (Peabody Coal Company)
Colstrip Units 1, 2, 3, 4
East/West Decker Mine (Kiewit Mining and Engineering Company)
Rosebud Mine (Western Energy Company)
Spring Creek Mine (NERCO Coal Company)

Other Proposed Regional Activity[1]

CX Ranch Mine
Greenleaf-Miller Mine
Montco Mine
Tongue River Railroad
Wolf Mountain Mine

LOW BASELINE ALTERNATIVE[2]

Existing Montana Coal Mines and Power Plants

Absaloka Mine (Westmoreland Coal Company)
Big Sky Mine (Peabody Coal Company)
Colstrip Units 1, 2, 3, 4
East/West Decker Mine (Kiewit Mining and Engineering Company)
Rosebud Mine (Western Energy Company)
Spring Creek Mine (NERCO Coal Company)

LEASING ALTERNATIVES

LEASING ALTERNATIVE 2A (Preferred Alternative)

Expansion/Extension Tracts[3]	New Mine Tracts
Colstrip A & B	Coal Creek
Colstrip C	Cook Mountain
Colstrip D	Northwest Otter Creek
North Decker	
Spring Creek	
West Decker	

LEASING ALTERNATIVE 2B

Expansion/Extension Tracts[3]	New Mine Tracts
Colstrip A & B	Coal Creek
Colstrip C	Northwest Otter Creek
Colstrip D	
North Decker	
Spring Creek	
West Decker	

TABLE 1-3 (Continued)
ALTERNATIVES — POWDER RIVER I
SUPPLEMENTAL EIS

LEASING ALTERNATIVE 4

Expansion/Extension Tracts[3]	New Mine Tracts
Colstrip A & B	Coal Creek
Colstrip C	Cook Mountain
Colstrip D	Decker-Birney (Ashland)
North Decker	Northwest Otter Creek
Spring Creek	Southwest Otter Creek
West Decker	

Source: Powder River I FEIS, 1981, and BLM, 1987.

[1] This High Baseline Alternative includes these proposed energy projects along with existing Powder River Region coal mines and power plants. The High Baseline Alternative is the same baseline as that used in the Powder River I FEIS. (Note: Only one baseline was used in the Powder River I FEIS.)

[2] This Low Baseline Alternative includes only existing mines and power plants in the Powder River Region of Montana. As such, this scenario recognizes the current 20 million ton per year excess production capacity in the Montana portion of the Region and assumes that any increases in demand for Montana coal in a baseline context (up to 20 million tons per year) would be met by existing mines.

[3] These Round I expansion/extension tracts are assumed to provide for "extension" of existing operations. The possibility exists for some moderate changes in production over time from existing mines. It is unlikely that these changes would result in any substantive increases in employment/population levels in the study area.

Low Baseline Alternative ("No Action")

This baseline alternative includes only the five existing Montana coal mines and the four electric power generators in the study area. Map 2 (map packet) shows the locations of these existing mines and power plants. The Low Baseline excludes the five proposed projects included in the High Baseline Alternative. The Low Baseline scenario more closely reflects current (1988) market conditions for Montana coal.

As noted above, this Supplement provides two different "no action" alternatives against which the three federal coal leasing alternatives (2A, 2B, and 4) are measured. The impact analysis using the High Baseline Alternative as a foundation is presented in Chapter 4. The analysis using the Low Baseline Alternative as a foundation is shown in Chapter 4A. In Chapter 4, for example, forecasted population levels in 1990 under Leasing Alternative 2A would be compared to the forecasted 1990 population for the High Baseline Alternative. This comparison allows an estimate of the absolute and percentage changes in 1990 population that would be attributable to Leasing Alternative 2A. Chapter 4A presents this same information using the Low Baseline Alternative as a foundation.

B. Leasing Alternatives —

As the name implies, these alternatives involve leasing Powder River I federal coal tracts. Each of these three federal coal leasing alternatives, designated Leasing Alternative 2A, 2B, and 4 contain different mixes of new mine tracts in Montana. All three leasing alternatives contain the same six expansion/extension tracts and different mixes of new mine tracts in Montana (see Tables 1-1 and 1-3). For example, Leasing Alternative 2A consists of the six expansion/extension tracts and the Northwest Otter Creek, Cook Mountain, and Coal Creek new mine tracts.

Throughout this Supplement, an alternative that involves leasing Round I federal coal will be designated a "leasing alternative." Because this Supplement is concerned with impacts to the Northern Cheyenne and Crow from Powder River I coal leasing, the impact analysis will focus on how leasing of Round I federal coal tracts would affect the two Reservations in the context of either the High Baseline (Chapter 4) or Low Baseline (Chapter 4A).

CHAPTER 2

SUMMARY COMPARISON OF IMPACTS AMONG THE ALTERNATIVES

2.1 INTRODUCTION

Eleven Montana tracts were included in the seven original leasing alternatives in the Powder River I FEIS. The seven leasing alternatives included different combinations of Wyoming and Montana tracts. See Table 2-4 in the Powder River I FEIS for tract tonnages. Those leasing alternatives were designated 2A, 2B, 2C, 3A, 3B, 3C, and 4. Because this Supplement focuses only on effects from Montana tracts, it analyzes only those three leasing alternatives containing different sets of Montana tracts.

Leasing Alternative 2A:

Powder River I Leasing Alternatives 2A, 2C, 3A, and 3C (the Regional Coal Team's "Preferred Alternative") all contain identical Montana tracts: the six expansion/extension tracts and the Cook Mountain, Coal Creek, and Northwest Otter Creek new mine tracts (see Table 2-1). This group of tracts is designated "Leasing Alternative 2A" in this Supplement.

TABLE 2-1
POWDER RIVER I LEASING ALTERNATIVES CONTAINING MONTANA TRACTS

Tract Name	Tract Type*	Leasing Alternative 2A	2B	2C	3A	3B	3C	4
Colstrip A & B	M.E.	X	X	X	X	X	X	X
Colstrip C	M.E.	X	X	X	X	X	X	X
Colstrip D	M.E.	X	X	X	X	X	X	X
North Decker	M.E.	X	X	X	X	X	X	X
Spring Creek	M.E.	X	X	X	X	X	X	X
West Decker	M.E.	X	X	X	X	X	X	X
Coal Creek	N.M.	X	X	X	X	X	X	X
Cook Mountain	N.M.	X		X	X		X	X
Decker-Birney (Ashland)	N.M.							X
Northwest Otter Creek	N.M.	X	X	X	X	X	X	X
Southwest Otter Creek	N.M							X

* M.E. denotes mine "expansion/extension" tract
N.M. denotes "new mine" tract

NOTE: Leasing Alternatives 2A, 2C, 3A, and 3C all contain the same Montana tracts. (Leasing Alternative 3C is the Regional Coal Team's Preferred Alternative.)

Leasing Alternatives 2B and 3B contain the same Montana tracts.

Source: BLM, 1987

Leasing Alternative 2B:

Powder River I Leasing Alternatives 2B and 3B contain identical Montana tracts: the six expansion/extension tracts and the Coal Creek and Northwest Otter Creek new mine tracts. This group of tracts is designated "Leasing Alternative 2B" in this Supplement.

Leasing Alternative 4:

Powder River I Leasing Alternative 4 (maximum leasing alternative) contains the six expansion/extension tracts plus the Coal Creek, Cook Mountain, Decker-Birney (Ashland), Northwest Otter Creek, and Southwest Otter Creek new mine tracts. This group of tracts is designated "Leasing Alternative 4" in this Supplement.

2.2 SUMMARY OF ALTERNATIVES

Introduction

This section of Chapter 2 describes the effects to the Northern Cheyenne and Crow Tribes from the High and Low Baseline ("no action") Alternatives. Section 2.21 presents the High Baseline Alternative for both Tribes. The Low Baseline is summarized in 2.22. The remaining three sections summarize and compare the economic, social, and cultural impacts to the Northern Cheyenne and Crow Tribes from each of the three leasing alternatives containing Montana's Powder River Round I federal coal tracts. Leasing Alternatives 2A, 2B, and 4 are summarized in sections 2.23, 2.24, and 2.25, respectively. Within each of these sections, the Northern Cheyenne summary is presented first, followed by that for the Crow. This impact summary is presented in the context of both the High Baseline and Low Baseline Alternative, both of which contain no Powder River I leasing. These "no action" alternatives represent two different energy scenarios for the Powder River Basin of Montana.

The summary of impacts in this chapter was developed from the full impact analysis in Chapters 4 and 4A, "Environmental Consequences." Chapter 4 uses the High Baseline Alternative as a foundation and 4A uses the Low Baseline Alternative. Tract-specific economic, social, and cultural impacts for each of the 11 Montana tracts are contained in the Tract Profile Package, an integral part of this Supplemental EIS. (See Appendix B.) Table 2-2 shows the tract locations respective to each of the Reservations and presents relevant operating information. Map 5 (map packet) shows the location of the five new mine tracts and six expansion/extension tracts in the Powder River Region of Montana.

TABLE 2-2
TRACT LOCATIONS

Tract Name	Distance from Reservation		Assumed Annual	Assumed Start Dates		Peak Operation
	N. Cheyenne	Crow	Production[1]	Construction	Operation	Employment
Expansion/Extension Tracts:						
Colstrip A&B	11 mi.	11 mi.	([2])	Currently being mined (Rosebud mine)		No increase
Colstrip C	11 mi.	11 mi.	([2])	Currently being mined (Rosebud mine)		No increase
Colstrip D	17 mi.	17 mi.	([2])	1988	1988	No increase
North Decker	19 mi.	10 mi.	([2])	1998	1999	No increase
Spring Creek	19 mi.	10 mi.	([2])	1999	2000	No increase
West Decker	19 mi.	10 mi.	([2])	1996	1997	No increase
New Mine Tracts:						
Coal Creek	3 mi.	40 mi.	4.1	1996	1998	136
Cook Mountain	2 mi.	40 mi.	6.4	1994	1996	212
Decker-Birney (Ashland)	7 mi.	40 mi.	9.1	1999	2001	305
Northwest Otter Creek	6 mi.	40 mi.	10.3	1998	2000	341
Southwest Otter Creek	6 mi.	40 mi.	10.0	1998	2000	334

[1] Million tons/year
[2] These expansion/extension tracts are assumed to extend an existing mine's life rather than increasing annual production. This assumption is used throughout the Supplement.

Source: Company estimates; BLM, 1987.

The following assumptions were made in developing the analysis in Chapter 2. These assumptions are discussed in greater detail in the Technical Report.

1. Under both the High and Low Baselines, until development occurs, it is assumed there will be a 1.7 percent Native American population growth rate on the Northern Cheyenne Reservation and a 1.4 percent Native American population growth rate on the Crow Reservation.

2. Lack of housing for non-Native Americans will constrain non-Native American population growth on the Northern Cheyenne Reservation. This is not expected to be a problem on the Crow Reservation because of the small number of people who are expected to settle there in response to Round I development.

3. Economic growth on the Northern Cheyenne Reservation is expected to decline under both the High and Low Baselines until 1990 and then stabilize until development begins. Economic growth on the Crow Reservation is expected to remain static at 1986 levels until development begins.

4. Native American hiring rate is expected to be approximately 3.5 percent under the High Baseline Alternative and with each of the three leasing alternatives. This is based on past hiring practices in the Powder River Region of Montana that did not fall under any hiring agreements between Native Americans and energy companies.

5. "Resident": A person who lives on the Reservation. Includes those who live there when development begins and anyone who moves into the area and settles on the Reservation as development occurs.

6. Some Northern Cheyenne Tribal members living off the Reservation would return during coal development in search of employment. Past Native American migration patterns during energy development in the Colstrip area substantiate this assumption (Feeney, et al., 1986).

2.21 High Baseline Alternative ("No Action")

Introduction

Changes under the High Baseline Alternative between 1986 and the year 2005 result primarily from natural population increases and the assumed implementation of five projects that have been proposed by various companies for the Powder River Region of Montana. These projects are the Montco mine, Wolf Mountain mine, CX Ranch mine, Greenleaf Miller mine, and the Tongue River Railroad (see Map 1, map packet). These projects are not part of the Powder River I coal lease offering although they would, if implemented, create a general economic stimulus to the Powder River Region of Montana in terms of increased jobs, payroll, and business activity. Future market conditions for Montana coal will determine whether these five projects are built between now and the year 2005. Presently, Montana coal market conditions are not favorable for this level of development. Existing Montana mines and power plants, also a part of the High Baseline Alternative, are assumed to operate at existing levels through the year 2005.

NORTHERN CHEYENNE RESERVATION

There would be increases in employment, population, household income (mainly coal job payroll), and business activity on the Reservation from the High Baseline Alternative. In addition, there would be needed expenditures on key public services to accommodate the associated population influx. The population change would be comprised primarily of natural population increase and of Northern Cheyenne moving back to the Reservation to find employment associated with the High Baseline Alternative. Changes in non-Native American population on the Reservation are not constrained by the limited amount of housing available for non-Native Americans under the High Baseline. Similarly, limited housing is not a constraint for returning Northern Cheyenne/Native Americans because they typically would move in with relatives or friends. Figure 2-1 shows the forecasted population under the High Baseline for the period 1990-2005. Table 2-3 shows the forecasted High Baseline values for a variety of social and economic indicators from 1990 to 2005. Table 2-4 shows the current values/ratings and the percentage increases that the numbers in Table 2-3 represent over 1987 values.

Given the current poor condition of many public services on the Reservation, they would be severely burdened by both on and off Reservation population growth associated with the High Baseline Alternative. Services that are expected to be most affected are housing, water delivery system, health services (including ambulance and urgent care), education, law enforcement, fire, social services (child abuse, spouse abuse, welfare, etc.), and roads. These services are presently funded from a mix of Indian Health Service (IHS), Bureau of Indian Affairs (BIA), Tribal, and other sources. There is no guarantee that funds would be available to meet the increases in demands associated with the High Baseline Alternative. Tribal revenues are not expected to increase in response to off-Reservation coal development. Consequently, given current Tribal fiscal conditions, it is extremely unlikely that the Tribe would be able to generate sufficient revenues to fund these needed service expenditures. Many of these services are currently below standards and would require additional increases in expenditures (Table 2-3) in the face of increased demand associated with the High Baseline just to maintain existing service shortfalls. See Chapter 4, Section 4.1.6N, for further information on the effects to services, including increased capital expenditures required.

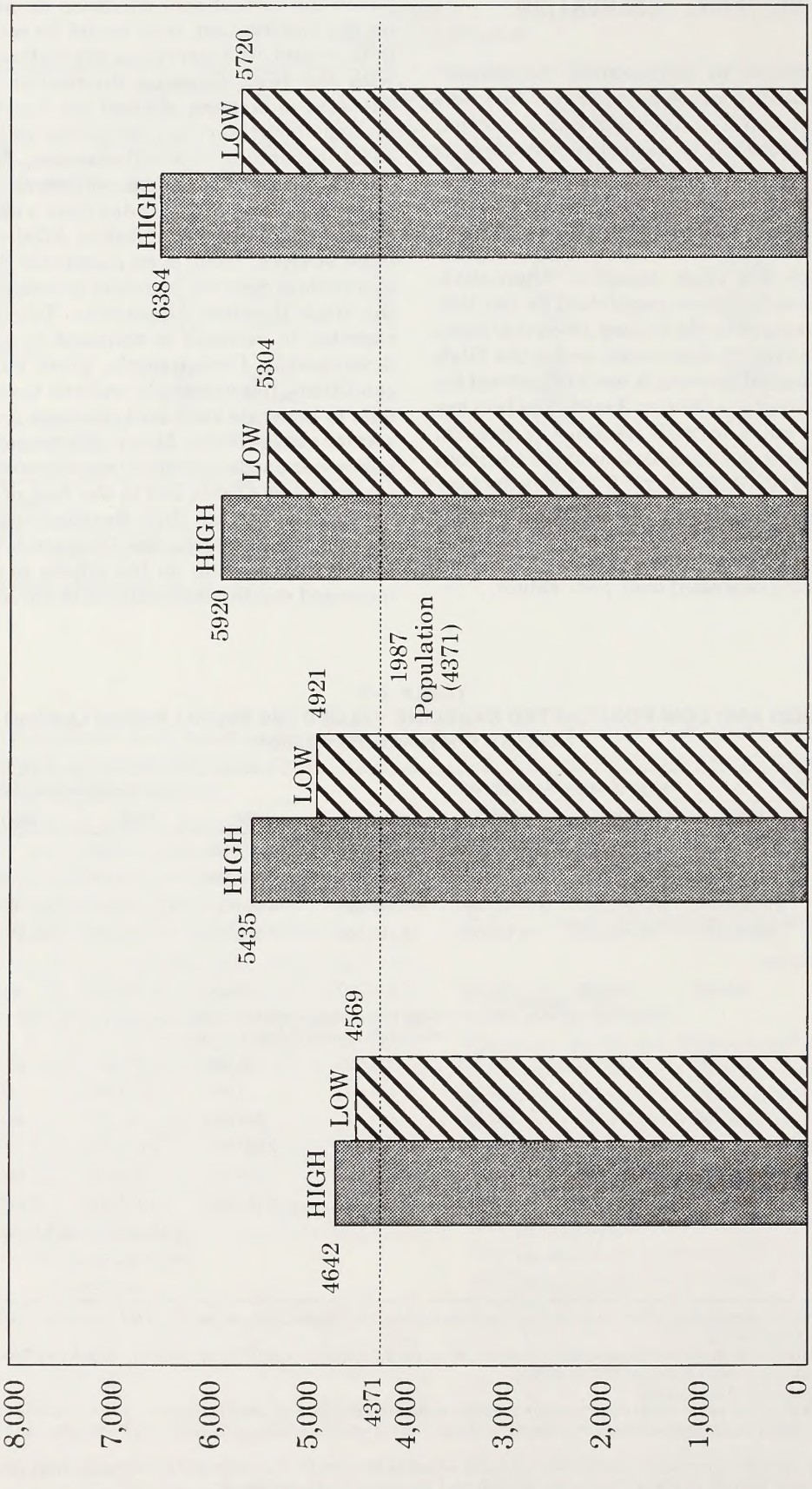
TABLE 2-3
HIGH AND LOW FORECASTED BASELINE VALUES (No Round I Federal Leasing)
Northern Cheyenne Reservation

	High Baseline Alternative[1]				Low Baseline Alternative[1]			
	1990	1995	2000	2005	1990[2]	1995	2000	2005
Employment[3]	475	561	566	566	469	469	469	469
Population	4,642	5,435	5,920	6,384	4,569	4,921	5,304	5,720
Household Income[4]	$16,400,000	$18,680,000	$18,830,000	$18,830,000	$16,260,000	$16,260,000	$16,260,000	$16,260,000
Business Activity[4]	15,680,000	16,150,000	16,180,000	16,180,000	15,650,000	15,650,000	15,650,000	15,650,000
Operating Expenditures for:[5]								
a) Social Services[6]	126,000	198,000	234,000	270,000	125,000	162.000	180,000	216,000
b) Roads	Road maintenance costs are likely to increase under both Baselines but it is not possible to accurately predict the magnitude.							
c) Water/Sewage	198,000	230,000	251,000	271,000	195,000	210,000	227,000	245,000
d) Fire	3,000	12,000	18,000	24,000	2,000	7,000	11,000	16,000
e) Law Enforcement	552,000	694,000	789,000	891,000	538,000	607,000	681,000	762,000
f) Health Care	2,714,000	3,191,000	3,481,000	3,826,000	2,681,000	2,910,000	3,159,000	3,429,000
g) Housing	325,000	394,000	440,000	483,000	319,000	351,000	388,000	426,000
h) Education	3,216,000	3,817,000	4,196,000	4,555,000	3,163,000	3,432,000	3,727,000	4,044,000
Culture	Severe Effects				Moderate-Severe Effects			
Social Well Being	Severe Effects				Moderate-Severe Effects			
Social Organization	Moderate Effects				Mild Effects			

[1] The two Baseline Alternatives represent a high and low baseline energy future for the Powder River Region of Montana. Both baselines represent no Powder River I federal coal leasing.
[2] Based on recent past trends, employment, household income, and business activity are expected to decline from 1986 levels. They are then assumed to remain static at those lower levels between 1990 and 2005.
[3] Represents full-time equivalent employees.
[4] Household income is expected to increase under the High Baseline Alternative due to forecasted increases in employment (payroll) from regional energy activity. Business activity decreases based on recent past trends and the weak economic tie between the Reservation and rest of the 6-county region.
[5] These are necessary additional operating expenditures to provide adequate services for the population growth associated with each baseline alternative. See Chapter 4, Section 4.1.6N or Chapter 4A, Section 4A.1.6N for Capital Expenditures.
[6] Includes welfare, spouse/child abuse counseling, etc.

Source: BLM, 1988

Figure 2-1
HIGH AND LOW BASELINE POPULATION FORECASTS
Northern Cheyenne Reservation



Source: BLM 1988

TABLE 2-4
BASELINE COMPARISON SUMMARY
PERCENTAGE CHANGE FROM 1987 LEVELS
Northern Cheyenne Reservation

	Current Situation		Baseline Alternatives[1]							
			High				Low			
	Current Values	Current Rating	1990	1995	2000	2005	1990[2]	1995	2000	2005
Employment[3]	515*		-8	9	10	10	-9	-9	-9	-9
Population	4,371		6	24	35	46	5	13	21	31
Household Income[4]	$17,960,000*		-9	4	5	5	-9	-9	-9	-9
Business Activity[4]	$16,700,000*		-6	-3	-3	-3	-6	-6	-6	-6
Operating Expenditures for:[5]										
a) Social Services[6]	108,000	Inadequate	17	83	117	150	16	50	67	100
b) Roads	381,000	Inadequate	See Table 2-3							
c) Water/Sewage	186,000	Inadequate	6	24	35	46	5	13	22	32
d) Fire	0	Inadequate	NA[7]	NA	NA	NA	NA	NA	NA	NA
e) Law Enforcement	500,000	Inadequate	10	39	58	78	8	21	36	52
f) Health Care	2,552,000	Inadequate	6	25	36	50	5	14	24	34
g) Housing	300,000	Inadequate	8	31	47	61	6	17	29	42
h) Education	3,010,000	Inadequate	7	27	39	51	5	14	24	34
Culture			Severe Effects				Moderate — Severe Effects			
Social Well-Being			Severe Effects				Moderate — Severe Effects			
Social Organization			Moderate Effects				Mild Effects			

[1] The two Baseline Alternatives represent a high and low baseline energy future for the Powder River Region of Montana. Both baselines represent no Powder River I federal coal leasing.
[2] Based on recent past trends, employment, household income, and business activity are expected to decline from 1986 levels. They are then assumed to remain static at those lower levels between 1990 and 2005.
[3] Represents full-time equivalent employees.
[4] Household income is expected to increase under the High Baseline Alternative due to forecasted increases in employment (payroll) from regional energy activity. Business activity decreases based on recent past trends and the weak economic tie between the Reservation and rest of the 6-county region.
[5] These are necessary additional operating expenditures to provide adequate services for the population growth associated with each baseline alternative. See Chapter 4, Section 4.1.6N or Chapter 4A, Section 4A.1.6N for Capital Expenditures.
[6] Includes welfare, spouse/child abuse counseling, etc.
[7] Not Applicable.

*1986 values.

Source: BLM, 1988.

Some increase in regional prices, especially for housing and groceries, is likely during the period of peak population influx associated with the High Baseline Alternative (1991 to 2005); this could erode the buying power of Northern Cheyenne households, thereby adversely affecting their quality of life. Although these changes are difficult to forecast, housing and retail trade are expected to be most affected.

The Northern Cheyenne have not shared in past economic gains from regional coal development in either employment or business activity in proportion to their present composition of the local population. Consequently, it is unlikely that the Northern Cheyenne Tribe or Reservation would share substantively in the benefits from the coal development associated with the High Baseline Alternative. Native American participation in the coal mine-related labor force associated with the High Baseline Alternative is estimated at 27 jobs out of the 826 total direct jobs generated in the region. This reflects the fact that Native American employment in Montana's Powder River Basin mines has averaged approximately 3.5 percent of the total labor force, absent any sort of special hiring agreement.

A very weak economic relationship exists between the Northern Cheyenne Reservation and the rest of the six-county Powder River region of Montana (Technical Report 1). Benefits of off-Reservation economic activity, such as coal development, are not likely to be felt in any significant way by residents of the Reservation unless those residents obtain jobs associated with the development. In other words, few, if any, of the dollars generated by off-Reservation energy development have made, or are expected to make, their way onto the Reservation. Secondarily, payroll money that is paid to Reservation residents "leaks" out of the Reservation as these payroll dollars are spent off-Reservation. This has occurred during the construction and operation of existing mines in Big Horn County and existing power plants and mines in Rosebud County; it is expected to persist through the year 2005 under the High Baseline Alternative.

Development associated with the High Baseline Alternative is expected to affect Northern Cheyenne Tribal government structure and function. In recent years, Tribal Government has become more complex (Feeney, et al., 1986) and more involved in coordinating with outside governments. Population increases associated with the High Baseline Alternative on and near the Reservation would lead to more jurisdictional interaction between the Tribal government and state, county, and federal governments. There could be benefits to this increased interaction between the Tribe and other units of government. However, if resources are not available to the Tribe to efficiently deal with this increased level of interaction, it could result in the Tribe's inability to effectively manage the interaction. In addition, increased Tribal government complexity could lead to feelings of alienation between Tribal members and Tribal government.

Moderate impacts to social organization and severe impacts to social well-being would occur as a result of natural population increases on the Reservation, Reservation and regional employment increases, and inmigration associated with the High Baseline Alternative.

Effects to cultural conditions from the High Baseline Alternative include: (1) the transformation of Earth-Surface Dome into Dead Earth and the consequent destruction of spiritual attributes of the environment, (2) continued destruction of spirits at Colstrip, (3) continued physical/spiritual pollution which would upset the balance of the spiritual and matter/substance in the universe and force Northern Cheyenne plant collectors to change the areas from which they collect, (4) change in distribution and density of ritually significant bird and mammal species which may make their acquisition more difficult, (5) destruction of springs which would cause irreparable damage to the spirits associated with the destroyed springs, (6) changes in the environmental setting adjacent to the Tongue River (due to construction of the Tongue River Railroad and Montco Mine) which would change the spiritual attributes of the area and hence change the peoples' spiritual and physical relationship to the river, (7) disturbance of burial sites, early Cheyenne homesteading sites, battle sites, and localities used in the past for religious purposes that retain spiritual attributes, (8) terrain alterations which would disturb the physical and spiritual relationship between the Holy Lodge and its environmental setting, and between Birney and Ashland Villagers and their environmental setting, (9) loss of access to these areas east of the Reservation which would limit the Northern Cheyennes' ability to continue to collect essential earth paints used in the Sun Dance, (10) terrain alterations and the increasing population density associated with these proposed new mines which would change the physical and spiritual aspects of the environmental setting, and (11) the increasing frequency and diversity of contacts with the dominant culture which would change the lifestyles of the Northern Cheyenne and increase racial tension on both sides. These effects to cultural conditions are expected to be severe under the High Baseline Alternative.

See Chapter 4, Sections 4.1.1N through 4.1.9N for greater detail on this section.

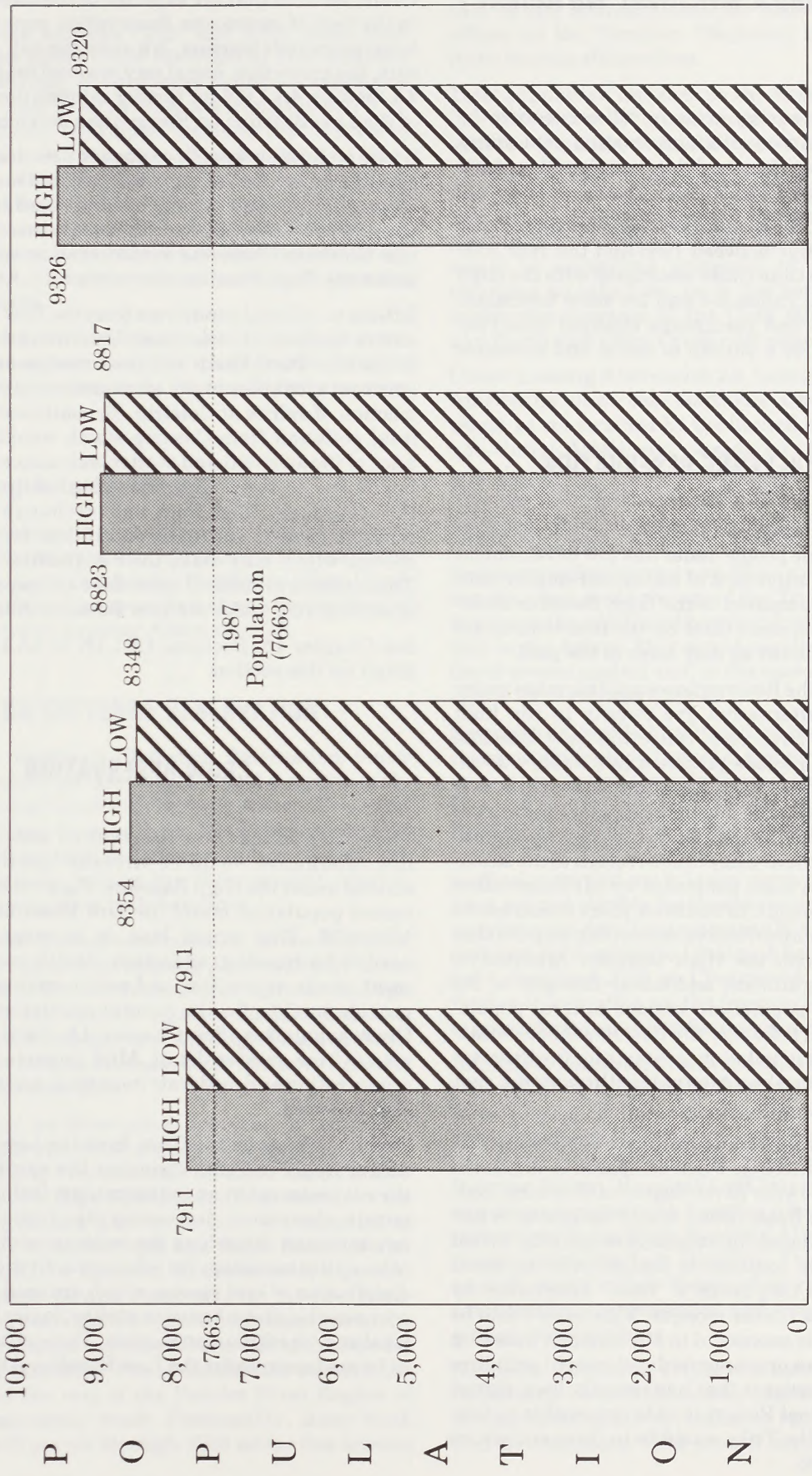
CROW RESERVATION

Effects on the Crow from the High Baseline Alternative are expected to be less than those for the Northern Cheyenne. Few minor changes in employment, population, and income on the Crow Reservation would be directly attributable to the High Baseline projects, although natural population increase (births minus deaths) would add an estimated 1,657 Native Americans to the Reservation between 1987 and 2005. Figure 2-2 shows the forecasted population under the High Baseline for the period 1990-2005. This would lead to increased expenditures needed for housing, education, health care, law enforcement, roads, recreation, and social services in order to adequately provide services for the natural population growth in the Crow population. Regional population growth off the Reservation would also add to traffic loads and increased demands on Reservation recreational facilities, which could affect law enforcement needs. Mild impacts to Crow social organization and moderate impacts to social well-being are also expected.

Cultural effects on the Crow from the High Baseline Alternative would include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations; decreasing the physical beauty of the environment; disturbing the isolation and natural setting of areas necessary for religious activities; changing the distribution of bird species which are used as ritual items; possible disturbance to archaeological sites with spiritual and/or ethnic significance; and reduction of the social isolation of the Crow. Reduction in the social isolation of the Crow would create a social setting in which loss of ethnic identity would be reinforced by increasing discrimination, jurisdictional disputes, and land and language loss. These effects are expected to be moderate under the High Baseline Alternative.

See Chapter 4, Sections 4.1.1C through 4.1.9C for greater detail on this section.

Figure 2-2
HIGH AND LOW BASELINE POPULATION FORECASTS
Crow Reservation



Source: BLM 1988

2.22 Low Baseline Alternative ("No Action")

Introduction

It is assumed no new energy projects will occur with the Low Baseline Alternative, although existing coal mines and power plants in Big Horn and Rosebud Counties would continue operating at current levels.

Changes in economic, social, and cultural conditions under this baseline alternative between 1986 and the year 2005 are expected to be less than those associated with the High Baseline Alternative. Tables 2-3 and 2-4 show forecasted Low Baseline values and percentage changes over 1987 values, respectively, for a variety of social and economic indicators.

NORTHERN CHEYENNE RESERVATION

There would be little change in the employment situation for Northern Cheyenne people under this low development scenario due to the relative lack of additional employment opportunities when compared to the High Baseline Alternative. High unemployment rates on the Reservation are expected to continue much as they have in the past.

Population levels on the Reservation would increase under the Low Baseline Alternative due mainly to the high Northern Cheyenne birth rate. Since the Low Baseline Alternative does not include proposed new energy development contained in the High Baseline Alternative, it is unlikely that there would be much impetus for an influx of non-Native Americans on the Reservation or for significant numbers of Northern Cheyenne to return to the Reservation to find employment generated by off-Reservation regional coal development. In addition, there would not be the off-Reservation non-Native American population growth associated with the High Baseline Alternative. Consequently, no significant additional changes to the Northern Cheyenne population, besides natural population growth, are expected under the Low Baseline Alternative. Figure 2-1 shows population forecasts for the Reservation under the Low Baseline Alternative through the year 2005.

The Northern Cheyenne would continue to experience relatively low per capita incomes when compared to the rest of the residents of the Powder River Region of Montana. Business activity on the Reservation would decline by 6 percent with little likelihood for substantive growth. Tribal revenues are likely to continue to decline over the fiscal year 1987 level until they reach a "floor" determined by minimal grazing and timber receipts. This trend could be reversed if the Tribe is successful in attracting or pursuing new business ventures or economic development activities such as the timber contract that has recently been signed by the Tribe (Technical Report 1). It is impossible to forecast how successful the Tribe would be in these endeavors through the year 2005.

Public services that are expected to continue deteriorating in the face of increasing Reservation population over the long run include housing, law enforcement, schools, health care, fire protection, social services, and roads. See Chapter 4A, Section 4A.1.6N for further information on the effects of the Low Baseline on Reservation services.

Social well-being would continue to deteriorate on the Reservation in the face of high and possibly increasing unemployment rates and inadequate and possibly declining service provisions. Social/cultural interactions with non-Northern Cheyenne would not occur as extensively as under the High Baseline Alternative.

Effects to cultural conditions from the Low Baseline Alternative include: (1) the transformation of Earth-Surface Dome into Dead Earth and the consequent destruction of spiritual attributes of the environment, (2) continued destruction of spirits at Colstrip, (3) continued physical/spiritual pollution from Colstrip which would upset the balance of the spiritual and matter/substance in the universe and force Northern Cheyenne plant collectors to change the areas they collect from, and (4) change in the distribution and density of ritually significant bird and mammal species which may make their acquisition more difficult. These effects to cultural conditions are expected to be moderate to severe under the Low Baseline Alternative.

See Chapter 4A, Sections 4A.1.1N to 4A.1.9N for greater detail on this section.

CROW RESERVATION

The effects on the Crow Reservation under the Low Baseline Alternative would be virtually identical to those described under the High Baseline. Figure 2-2 shows the forecasted population under the Low Baseline for the period 1990-2005. This would lead to increased expenditures needed for housing, education, health care, law enforcement, roads, recreation, and social services to adequately provide services for the natural population growth in the Crow population. See Chapter 4A, Sections 4A.1.1C to 4A.1.9C for greater detail. Mild impacts to Crow social organization and moderate impacts to social well-being are also expected.

Cultural effects on the Crow from the Low Baseline Alternative would include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations; decreasing the physical beauty of the environment; disturbing the isolation and natural setting of localities necessary for religious activities; changing the distribution of bird species which are used for ritual items; and possible disturbance to archaeological sites with spiritual and/or ethnic significance. These effects are expected to be moderate under the Low Baseline Alternative.

LEASING ALTERNATIVES

The two previous sections (2.21 and 2.22) dealt with expected changes under either the High or Low Baseline scenarios, respectively. Both of those Baselines assume no further federal coal leasing and are consequently "no action" alternatives. The impact analysis that follows in Sections 2.23, 2.24, and 2.25, uses those baselines as foundations against which federal coal Leasing Alternatives 2A, 2B, and 4 are analyzed and discussed. In all cases, the Northern Cheyenne summary is presented first, followed by that for the Crow. See Chapter 4, Section 4.2 and Chapter 4A, Section 4A.2 for greater detail on impacts from the leasing alternatives.

In general, impacts to the Crow are less than those to the Northern Cheyenne because of the much greater distance from the Crow Reservation to the Powder River I new mine tracts.

2.23 Leasing Alternative 2A

Impacts from this leasing alternative would result from the combination of the six expansion/extension tracts and the Cook Mountain, Coal Creek, and Northwest Otter Creek new mine tracts; Map 3 (map packet) shows the location of the tracts comprising Leasing Alternative 2A.

NORTHERN CHEYENNE RESERVATION

Impacts to the Northern Cheyenne Reservation under Leasing Alternative 2A are expected to be significantly less than those associated with Leasing Alternative 4 and slightly greater than those with 2B. See Tables 2-5 and 2-6 for greater detail on total differences and percentage differences, respectively, among the three leasing alternatives as measured against both baselines.

The total increase of employees residing on the Northern Cheyenne Reservation from Leasing Alternative 2A in the year 2005 is expected to be 109 measured against the High Baseline Alternative, and 121 against the Low Baseline. This is a 19 percent increase over the High Baseline Alternative and a 26 percent increase over the Low Baseline Alternative in the year 2005.

The total annual on-Reservation increase in household income associated with these employment changes in 2005 would be 15 percent over the total on-Reservation household income with the High Baseline and 20 percent over the Low Baseline. Business activity in 2005 is forecasted to increase by only $580,000 with the High Baseline and $680,000 with the Low Baseline, an increase of 4 percent over the High Baseline and 4 percent over the Low Baseline. This is a very modest increase when compared to the $694,800,000 forecasted increase for the rest of the Powder River Region of Montana. The economic ties between the Reservation and the rest of the Powder River Region of Montana are extremely weak. Presumably, these weak economic ties will persist through 2005 under this leasing alternative. See Technical Report 1 for a detailed discussion of the approach used by BLM to assess economic effects on the Northern Cheyenne Reservation from all three leasing alternatives.

Total population increase on the Reservation due to Leasing Alternative 2A would be 486 people in the year 2005 with the High Baseline Alternative and 672 with the Low Baseline. This is an 8 percent increase over the High Baseline and 12 percent over the Low Baseline. See Figure 2-2 and Tables 2-5 and 2-6 for greater detail on these population impacts. This on-Reservation population growth would be comprised primarily of Northern Cheyenne returning to take jobs, or in the hope of obtaining jobs, during development of the Cook Mountain, Coal Creek, and Northwest Otter Creek new mine tracts.

Under Leasing Alternative 2A, inmigration of non-Native Americans onto the Northern Cheyenne Reservation would be constrained by the limited housing available for non-Native Americans. (A reduced amount of housing for non-Native Americans would be available under this leasing alternative because some of it would have been utilized by non-Native Americans under the High Baseline Alternative.) See Technical Report 4 for estimates of the future housing availability for non-Native Americans. The housing situation could change if the Tribe or a private entity were to make additional housing available on the Reservation in the future. This would require the commitment of development capital and, in the case of Tribal Trust Land, action by the Tribal Council.

Services that would be affected by people moving onto the Reservation include housing, health care, education, fire protection, social services (e.g., child/spouse abuse, welfare, alcohol treatment), roads, and law enforcement. Impacts on health care and social services would be almost totally from Native Americans because, except for urgent medical care and ambulance service, non-Native Americans are not eligible for these services. Tables 2-5 and 2-6 provide more detail on impacts to Northern Cheyenne Reservation services due to Leasing Alternative 2A. See Chapter 4, Section 4.2.6N or Chapter 4A, Section 4A.2.6N for further information on the impacts to services, including increased capital expenditures required.

Impacts to Reservation services and infrastructure are also probable from this leasing alternative due to the large off-Reservation population growth that would result primarily from development of the three new mine tracts included in this leasing alternative. The total three-county (Big Horn, Powder River, Rosebud) off-Reservation population change associated with Leasing Alternative 2A is 2,177 (7 percent) with the High Baseline Alternative and 1,494 (5 percent) with the Low Baseline. This level of population growth would affect Reservation roads (commuter and truck traffic), law and order, and social services (e.g., counseling), among others.

Northern Cheyenne Tribal revenues are not expected to increase as a result of Leasing Alternative 2A since Tribal revenue sources are not linked to regional off-Reservation coal development. This creates serious problems for the

TABLE 2-5
LEASING ALTERNATIVE IMPACT SUMMARY
TOTAL CHANGE FROM EACH BASELINE
Northern Cheyenne Reservation

	Baseline Alternatives[1]	Leasing Alternatives: 2A 1990	2A 1995	2A 2000	2A 2005	2B 1990	2B 1995	2B 2000	2B 2005	4 1990	4 1995	4 2000	4 2005
Employment	High	0	24	93	109	0	0	74	92	0	24	122	168
	Low	0	18	116	121	0	0	84	96	0	18	146	174
Population	High	0	21	427	486	0	0	406	469	0	21	465	623
	Low	0	98	597	672	0	0	509	578	0	98	636	802
Household Income	High	0	$550,000	$2,470,000	$2,790,000	0	0	$1,870,000	$2,420,000	0	$550,000	$3,110,000	$4,380,000
	Low	0	550,000	2,910,000	3,270,000	0	0	2,200,000	2,780,000	0	550,000	3,650,000	4,880,000
Business Activity	High	0	110,000	510,000	580,000	0	0	390,000	500,000	0	110,000	650,000	910,000
	Low	0	110,000	600,000	680,000	0	0	450,000	570,000	0	110,000	760,000	1,010,000
Operating Expenditures for:[2]													
a) Social Services[3]	High	0	0	36,000	36,000	0	0	36,000	36,000	0	0	36,000	36,000
	Low	0	0	36,000	54,000	0	0	36,000	54,000	0	0	36,000	54,000
b) Roads	High / Low	Road maintenance costs are likely to increase under both baselines but it is not possible to accurately predict the magnitude.											
c) Water/Sewer	High	0	0	15,000	17,000	0	0	15,000	16,000	0	0	17,000	23,000
	Low	0	4,000	21,000	23,000	0	0	18,000	20,000	0	4,000	22,000	28,000
d) Fire	High	0	0	5,000	6,000	0	0	5,000	6,000	0	0	6,000	7,000
	Low	0	1,000	6,000	8,000	0	0	6,000	7,000	0	1,000	8,000	10,000
e) Law Enforcement	High	0	4,000	83,000	94,000	0	0	79,000	91,000	0	4,000	90,000	121,000
	Low	0	19,000	116,000	130,000	0	0	99,000	112,000	0	19,000	123,000	156,000
f) Health Care	High	0	3,000	231,000	256,000	0	0	222,000	248,000	0	3,000	255,000	339,000
	Low	0	53,000	312,000	344,000	0	0	266,000	296,000	0	53,000	335,000	422,000
g) Housing	High	0	0	34,000	37,000	0	0	33,000	35,000	0	0	37,000	50,000
	Low	0	8,000	45,000	49,000	0	0	39,000	42,000	0	8,000	49,000	61,000
h) Education	High	0	5,000	306,000	386,000	0	0	290,000	348,000	0	5,000	332,000	459,000
	Low	0	63,000	427,000	496,000	0	0	359,000	427,000	0	63,000	448,000	591,000

[1] Both Baselines assume no Powder River I federal coal leasing.
[2] These are necessary additional operating expenditures brought on by the population growth associated with each leasing alternative. See Chapter 4, Section 4.2.6N or Chapter 4A, Section 4A.2.6N for Capital Expenditures,
[3] Includes welfare, spouse/child abuse counseling, etc.

Source: BLM, 1988

TABLE 2-6
SUMMARY OF IMPACTS FROM LEASING ALTERNATIVES
PERCENTAGE CHANGE OVER EACH BASELINE
Northern Cheyenne Reservation

	Baseline Alternatives[1]	Leasing Alternatives 2A 1990	2A 1995	2A 2000	2A 2005	2B 1990	2B 1995	2B 2000	2B 2005	4 1990	4 1995	4 2000	4 2005
Employment	High	0	4	16	19	0	0	13	16	0	4	22	30
	Low	0	4	25	26	0	0	18	20	0	4	31	37
Population	High	0	0	7	8	0	0	7	7	0	0	8	10
	Low	0	2	11	12	0	0	10	10	0	2	12	14
Household Income	High	0	3	13	15	0	0	10	13	0	3	17	23
	Low	0	3	18	20	0	0	14	17	0	3	22	30
Business Activity	High	0	1	3	4	0	0	2	3	0	1	4	6
	Low	0	1	4	4	0	0	3	4	0	1	5	6
Operating Expenditures for:[2]													
a) Social Services[3]	High	0	0	15	13	0	0	15	13	0	0	15	13
	Low	0	0	20	25	0	0	20	25	0	0	20	25
b) Roads	High / Low	Road maintenance costs are likely to increase under both the High and Low Baselines for each leasing alternative but the magnitude is not predictable											
c) Water/Sewage	High	0	0	6	6	0	0	6	6	0	0	7	8
	Low	0	2	9	9	0	0	8	8	0	2	10	11
d) Fire	High	0	0	28	25	0	0	28	25	0	0	33	26
	Low	0	14	45	50	0	0	45	44	0	14	73	63
e)Law Enforcement	High	0	1	11	11	0	0	10	10	0	1	11	14
	Low	0	3	15	17	0	0	15	15	0	3	18	20
f) Health Care	High	0	0	7	7	0	0	6	6	0	0	7	9
	Low	0	2	10	10	0	0	8	9	0	2	11	12
g) Housing	High	0	0	8	8	0	0	7	7	0	0	8	10
	Low	0	2	12	12	0	0	10	10	0	2	13	14
h) Education	High	0	0	7	8	0	0	7	8	0	0	9	11
	Low	0	2	11	12	0	0	10	11	0	2	12	15
Culture	High	Severely Impacted				Severely Impacted				Severely Impacted			
	Low	Severely Impacted				Severely Impacted				Severely Impacted			
Social Well-Being	High	Severely Impacted				Severely Impacted				Severely Impacted			
	Low	Severely Impacted				Severely Impacted				Severely Impacted			
Social Organization	High	Severely Impacted				Severely Impacted				Severely Impacted			
	Low	Severely Impacted				Severely Impacted				Severely Impacted			

[1] Both Baselines assume no Powder River I federal coal leasing.
[2] These are necessary additional operating expenditures brought on by the population growth associated with each leasing alternative. See Chapter 4, Section 4.2.6N or Chapter 4A.2.6N for Capital Expenditures.
[3] Includes welfare, spouse/child abuse counseling, etc.

Source: BLM, 1988.

Tribe because the Tribe would, for the most part, be unable to generate any additional revenues needed to respond to impacts that may occur from development. However, expenditures for on-Reservation services would have to increase for services to remain at baseline levels. It is unlikely that leasing of Powder River I new mine tracts in Montana would adversely affect the value of Northern Cheyenne coal. Chapter 4, Section 4.2.4C, and Technical Report 5 discuss this subject in more detail. Chapter 3, Section 3.6.N, indicates that several services and some elements of the infrastructure are currently below standards. These substandard services would probably continue to moderately deteriorate from existing levels under the Low Baseline. A more marked deterioration would occur under the High Baseline Alternative. By adding Leasing Alternative 2A to the Region, it is highly likely that the Reservation would experience long-term impacts to its service and infrastructure systems. It is very unlikely that the Tribe could fund these service requirements through its existing revenue structure.

Impacts would be severe to Reservation social organization and social well-being due to on- and off-Reservation population growth. The Reservation would become an increasingly diverse place. Conflict between Native Americans and non-Native Americans and among Native Americans would increase; simultaneously, the need for Native Americans to coordinate and cooperate in solving problems associated with this population growth would also increase. Increases in stress associated with changes in social organization, housing crowding, service/infrastructure shortfalls, and increased availability of illegal drugs in surrounding communities could lead to increases in alcoholism, drug abuse, family violence, crime, and feelings of deprivation because the Reservation would receive the negative impacts, but few benefits from regional coal development.

If Leasing Alternative 2A occurred with the High Baseline Alternative, total impacts to social organization and social well-being would be more severe than if Leasing Alternative 2A occurred with the Low Baseline. Impacts to social organization and well-being with Leasing Alternative 2A are expected to be more severe than with Leasing Alternative 2B, but less severe than those with Leasing Alternative 4.

Impacts to cultural conditions from Leasing Alternative 2A include: (1) the transformation of Earth-Surface Dome into Dead Earth and the consequent destruction of spiritual attributes of the environment, (2) change in the distribution and density of ritually significant bird and mammal species which may make their acquisition more difficult, (3) destruction of springs which would cause irreparable damage to the spirits associated with the springs, (4) continued physical/spiritual pollution which would upset the balance of the spiritual and matter/substance in the universe and force Northern Cheyenne plant collectors to change the areas from which they collect, (5) disturbance of burial sites, early Cheyenne homesteading sites, battle sites, and areas used in the past for religious purposes that retain spiritual attributes, (6) terrain alterations which would disturb the physical and spiritual relationship between the Holy Lodge and its environmental setting, and between Birney and Ashland Villagers and their environmental setting to the east, (7) loss of access to these areas east of the Reservation which would limit the Northern Cheyennes' ability to continue to collect essential earth paints used in the Sun Dance, and (8) terrain alterations and the increasing population density associated with the new mine tracts which would change the physical and spiritual aspects of the environmental setting and reduce the seclusion and privacy necessary for ongoing religious practices, and (9) the increasing frequency and diversity of contacts with the dominant society which would change the lifestyles of Northern Cheyenne and increase racial tensions on both sides. Impacts to cultural conditions would be severe under Leasing Alternative 2A.

CROW RESERVATION

Economic and social impacts to the Crow from Leasing Alternative 2A are expected to be mild when measured against either baseline. This is primarily due to the distance between the Crow Reservation and the new mine tracts. There would be insignificant impacts to employment, population, income, fiscal conditions, and Tribal government on the Crow Reservation. However, Reservation law enforcement, health care, roads, social services, social organization, and social well-being would be mildly affected as a result of this leasing alternative due to a variety of factors such as regional population increases, increases in Reservation traffic, and increased use of Crow Reservation health care facilities by Northern Cheyenne. It is unlikely that leasing of Powder River I new mine tracts in Montana would adversely affect development of Crow coal. Chapter 4, Section 4.2.4C, and Technical Report 5 discuss this topic in more detail.

Cultural impacts to the Crow from Leasing Alternative 2A are expected to be moderate. These impacts include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations; decreasing the physical beauty of the environment; disturbing the isolation and natural setting of areas necessary for religious activities; changing the distribution of bird species which are used for ritual items, possible disturbance to archaeological sites with spiritual and/or ethnic significance, and reduction of the social isolation of the Crow. Reduction in the social isolation of the Crow would create a social setting in which loss of ethnic identity would be reinforced by increasing discrimination, jurisdictional disputes, and land and language loss.

2.24 Leasing Alternative 2B

Impacts from this leasing alternative would result from a combination of the six expansion/extension tracts and the Coal Creek and Northwest Otter Creek federal coal new mine tracts. Map 4 (map packet) shows the location of the tracts comprising Leasing Alternative 2B.

NORTHERN CHEYENNE RESERVATION

Leasing Alternative 2B would result in the fewest impacts on the Northern Cheyenne of any of the three leasing alternatives. Impacts would be somewhat less than those occurring from Leasing Alternative 2A and significantly less than those associated with Leasing Alternative 4. Tables 2-5 and 2-6 provide more detailed information on how this leasing alternative compares to Leasing Alternatives 2A and 4.

The total increase of employees residing on the Reservation from this leasing alternative in the year 2005 is expected to be 92 measured against the High Baseline and 96 against the Low Baseline. This is a 16 percent increase over the High Baseline and a 20 percent increase over the Low Baseline in 2005. Figures 2-3 and 2-4 show the forecasted employment for Leasing Alternative 2B (and 4) under the High Baseline and Low Baseline, respectively.

The total annual on-Reservation increase in household income associated with these employment changes in 2005 would be 13 percent over the total on-Reservation household income with the High Baseline and 17 percent over the Low Baseline. Business activity in 2005 is forecasted to increase by only $500,000 with the High Baseline and $570,000 with the Low Baseline, an increase of 3 percent and 4 percent, respectively. The economic ties between the Reservation and the rest of the Powder River Region of Montana are extremely weak. This means that the Reservation is not likely to benefit significantly from the regional increase in economic activity in terms of jobs, construction contracts, general business activity, or increases in Tribal government revenues. Presumably, this weak economic tie between the Reservation and the rest of the study area will persist through the year 2005 under this Leasing Alternative as well.

Total population increase on the Reservation due to Leasing Alternative 2B would be 469 people in the year 2005 with the High Baseline and 578 with the Low Baseline. This is a 7 percent increase over the High Baseline Alternative and 10 percent over the Low Baseline Alternative. See Tables 2-5 and 2-6 for greater detail on these population impacts. This on-Reservation population growth would be comprised primarily of Northern Cheyenne returning to take jobs, or in the hope of obtaining jobs, during development of the Coal Creek and Northwest Otter Creek tracts. Figures 2-5 and 2-6 show the forecasted population for Leasing Alternative 2B (and 4) under the High Baseline and Low Baseline Alternatives, respectively.

Under this leasing alternative with High Baseline conditions, inmigration of non-Native Americans onto the Northern Cheyenne Reservation would be constrained by the limited amount of housing available for non-Native Americans. (A reduced amount of housing for non-Native Americans would be available because some of it would have been utilized by non-Native Americans with the High Baseline Alternative.) The housing situation could change if the Tribe or a private entity were to make additional housing available on the Reservation in the future. This would require the commitment of development capital and, in the case of Tribal Trust Land, action by the Tribal Council.

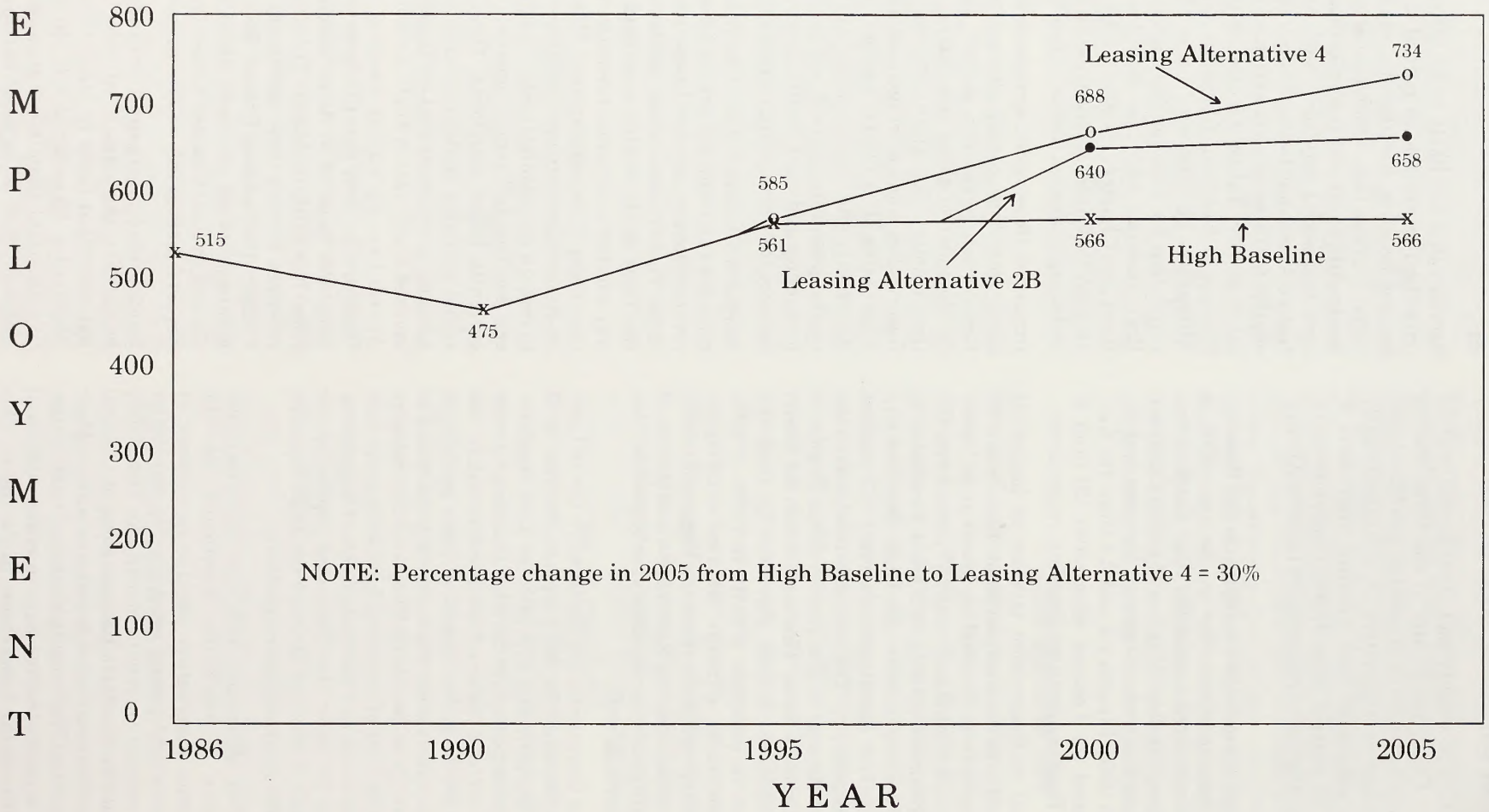
Services that are likely to be affected by people moving onto the Reservation as part of this leasing alternative include housing, health care, education, fire protection, social services (e.g., child/spouse abuse, welfare, alcohol treatment), roads, and law enforcement. Impacts on health care and social services would be almost totally from Native Americans because non-Native Americans are not eligible for these services except for urgent care and ambulance service. Tables 2-5 and 2-6 provide more detail on impacts to Northern Cheyenne services due to Leasing Alternative 2B. Figures 2-7 and 2-8 show the forecasted population for Leasing Alternative 2B (and 4) under the High Baseline and Low Baseline Alternatives, respectively. See Chapter 4, Section 4.2.6N or Chapter 4A, Section 4A.2.6N for further information on the impacts to services, including increased capital expenditures required.

Impacts to Reservation services and infrastructure are also likely from this leasing alternative due to the large off-Reservation population growth that would result from development of these two federal coal tracts. The total three-county (Big Horn, Powder River, Rosebud) off-Reservation population increase associated with Leasing Alternative 2B is 1,051 (3 percent) over the High Baseline Alternative and 732 (2 percent) over the Low Baseline. This level of population growth would affect Reservation roads (commuter and truck traffic), law enforcement, and social services (e.g., counseling), among others.

Northern Cheyenne Tribal revenues are not expected to increase as a result of Leasing Alternative 2B since Tribal revenue sources are not linked to regional coal development. This creates serious problems for the Tribe because the Tribe would, for the most part, be unable to generate any additional revenues needed to respond to impacts that may occur from development. However, expenditures for on-Reservation services would have to increase for services to remain at baseline levels. Chapter 3 indicates that several services and some elements of the infrastructure are currently below standards. These substandard services would probably continue to deteriorate moderately from existing levels under the Low Baseline Alternative. A more marked deterioration would occur under the High Baseline Alternative. By adding Leasing Alternative 2B to the Region, it is likely that the Reservation would experience long-term impacts to its service and infrastructure systems. It is unlikely that the Tribe could generate sufficient revenues to meet these additional service demands. It is unlikely that leasing Powder River I new mine tracts in Montana would adversely affect the value of Northern Cheyenne coal. Chapter 4, Section 4.2.4C, and Technical Report 5 discuss this subject in greater detail.

Impacts to social organization and social well-being would be similar to those described under Leasing Alternative 2A, but somewhat lower in magnitude. However, if Leasing Alternative 2B occurred with the High Baseline Alternative, the total cumulative impacts to social organization and social well-being would be more severe than if Leasing Alternative 2B occurred with the Low Baseline. Tables 2-5

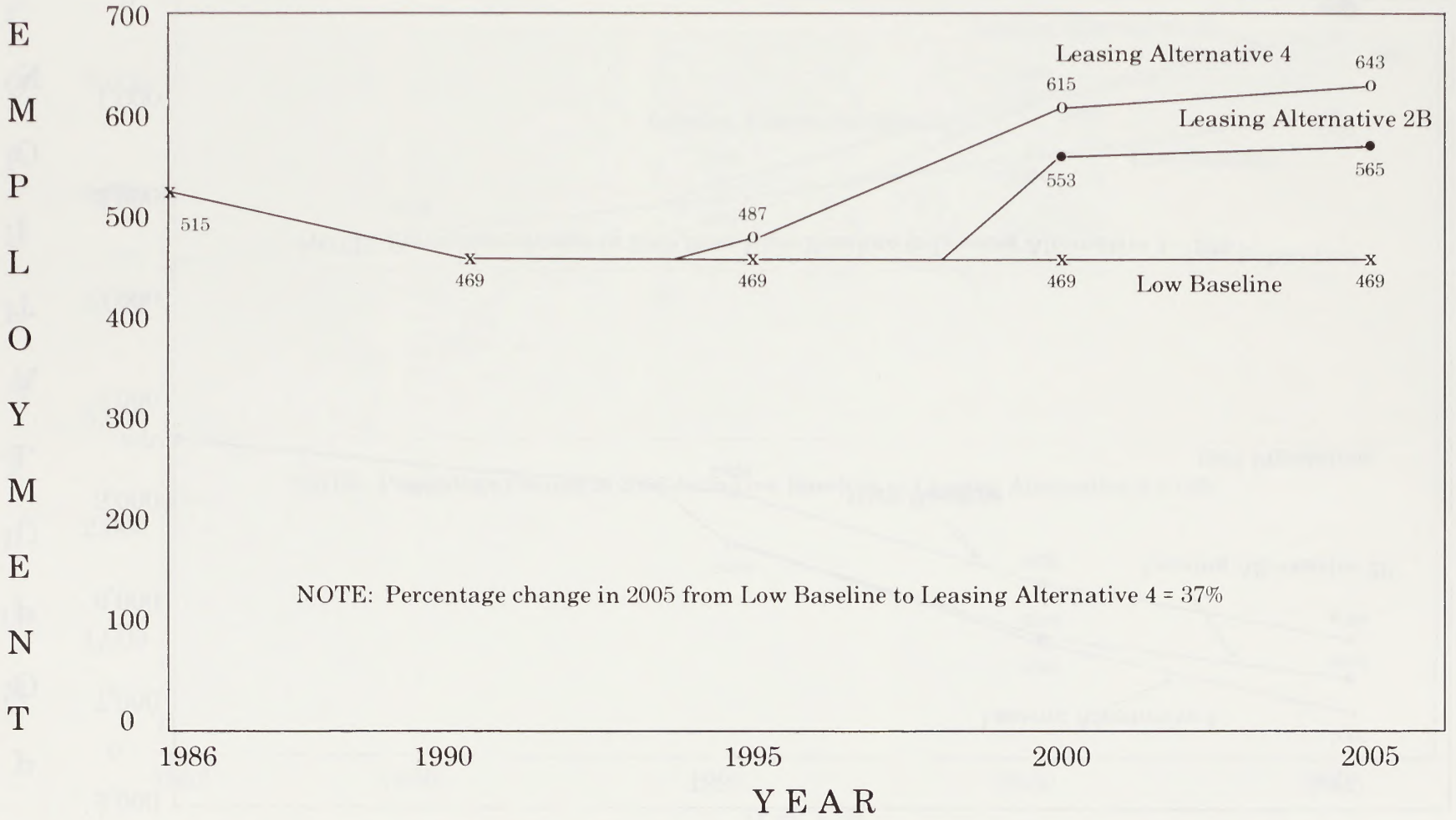
Figure 2-3
EMPLOYMENT FORECASTS [1] — LEASING ALTERNATIVES 2B AND 4 WITH HIGH BASELINE
Northern Cheyenne Reservation



[1]All numbers represent full-time equivalent positions.

Source: BLM 1988

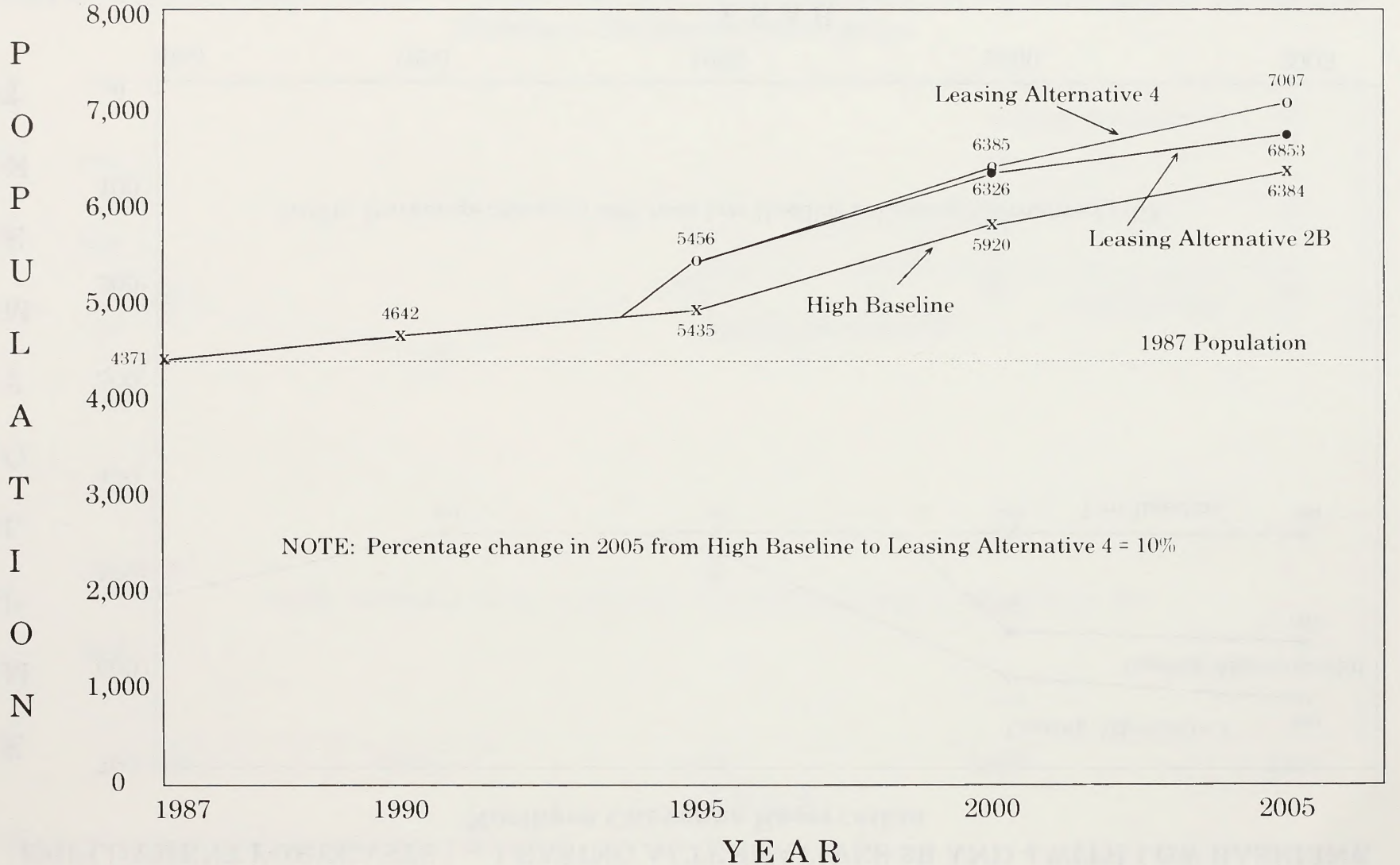
Figure 2-4
EMPLOYMENT FORECASTS [1] — LEASING ALTERNATIVES 2B AND 4 WITH LOW BASELINE
Northern Cheyenne Reservation



[1]All numbers represent full-time equivalent positions.

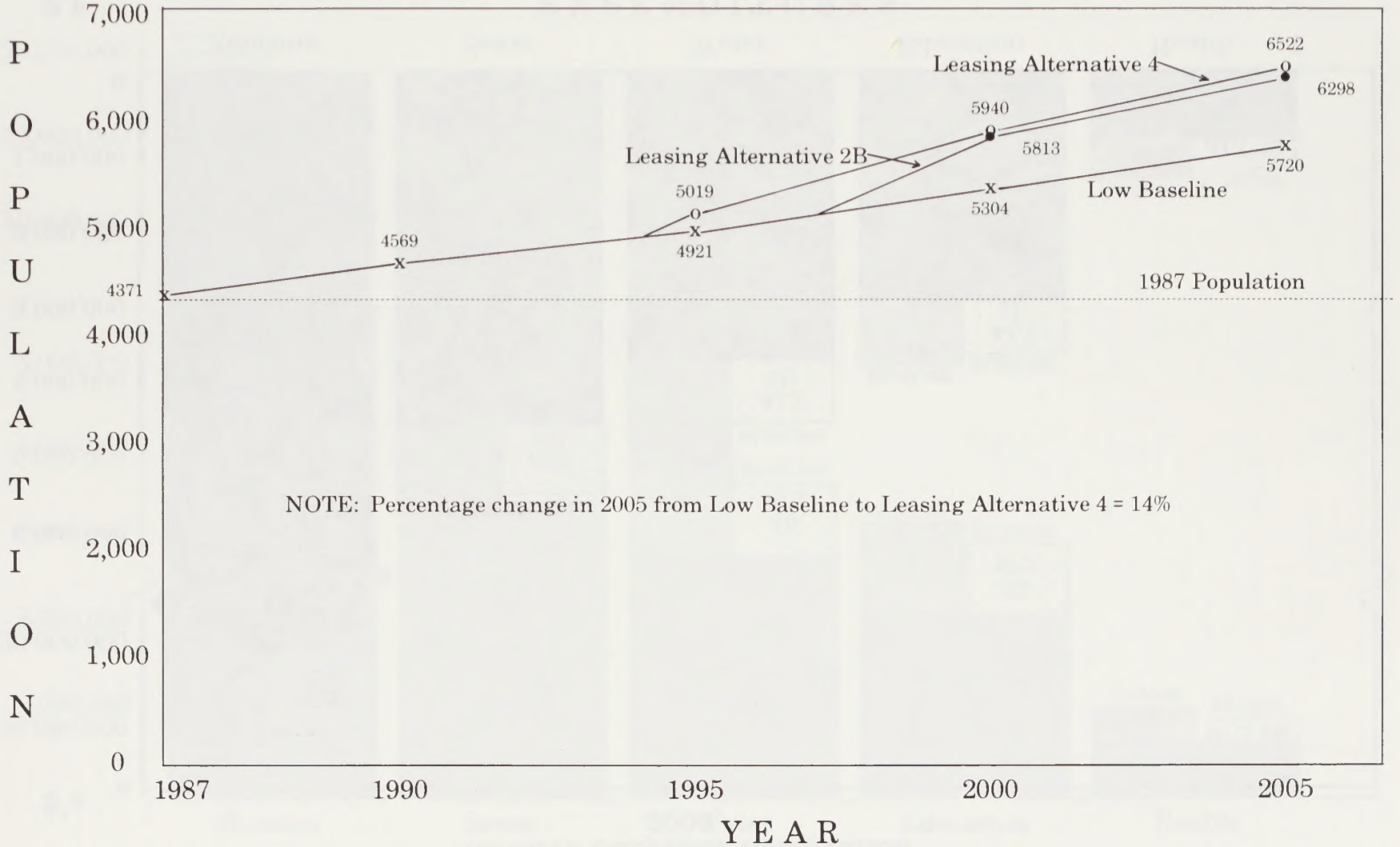
Source: BLM 1988

Figure 2-5
POPULATION FORECASTS — LEASING ALTERNATIVES 2B AND 4 WITH HIGH BASELINE
Northern Cheyenne Reservation



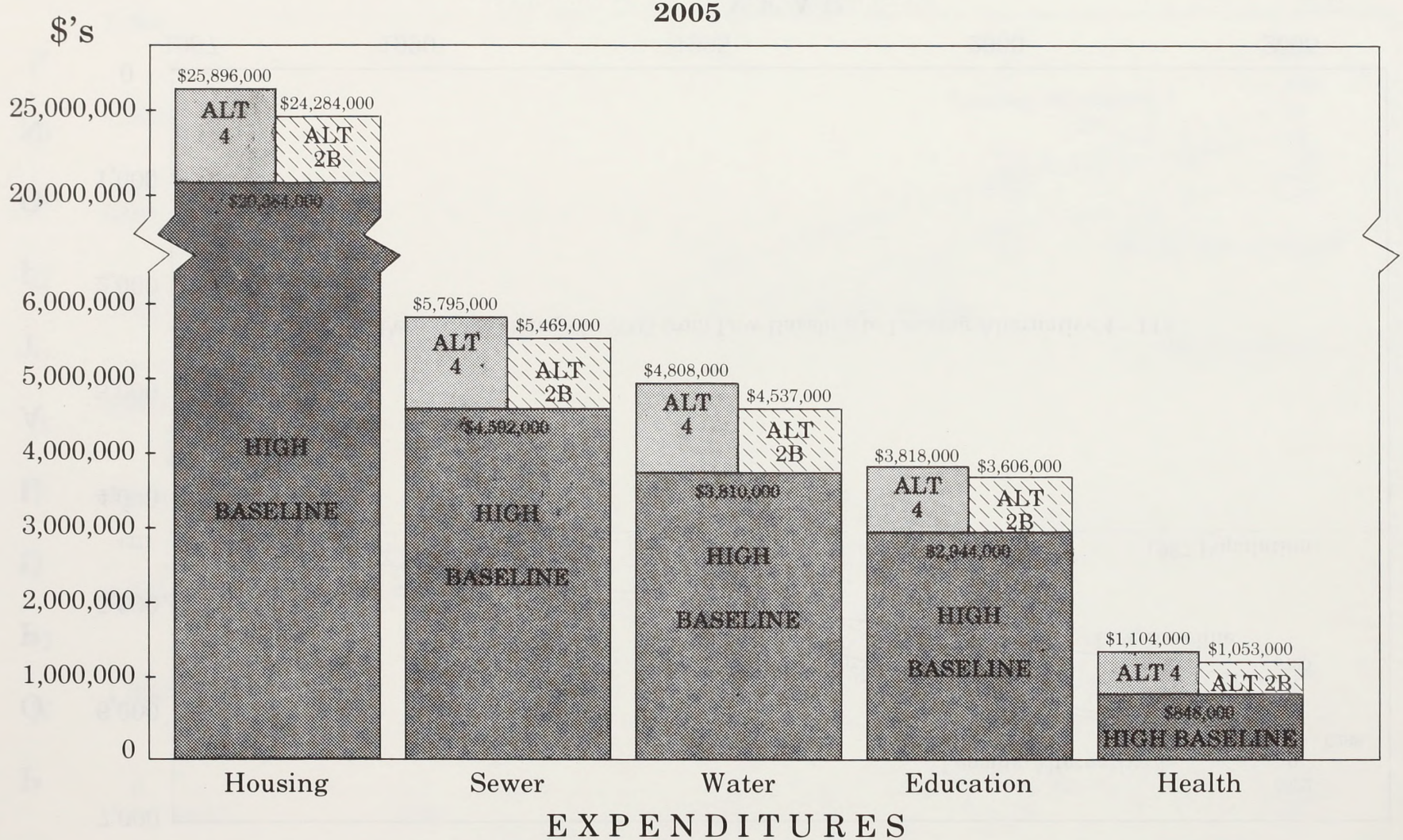
Source: BLM 1988

Figure 2-6
POPULATION FORECASTS — LEASING ALTERNATIVES 2B AND 4 WITH LOW BASELINE
Northern Cheyenne Reservation



Source: BLM 1988

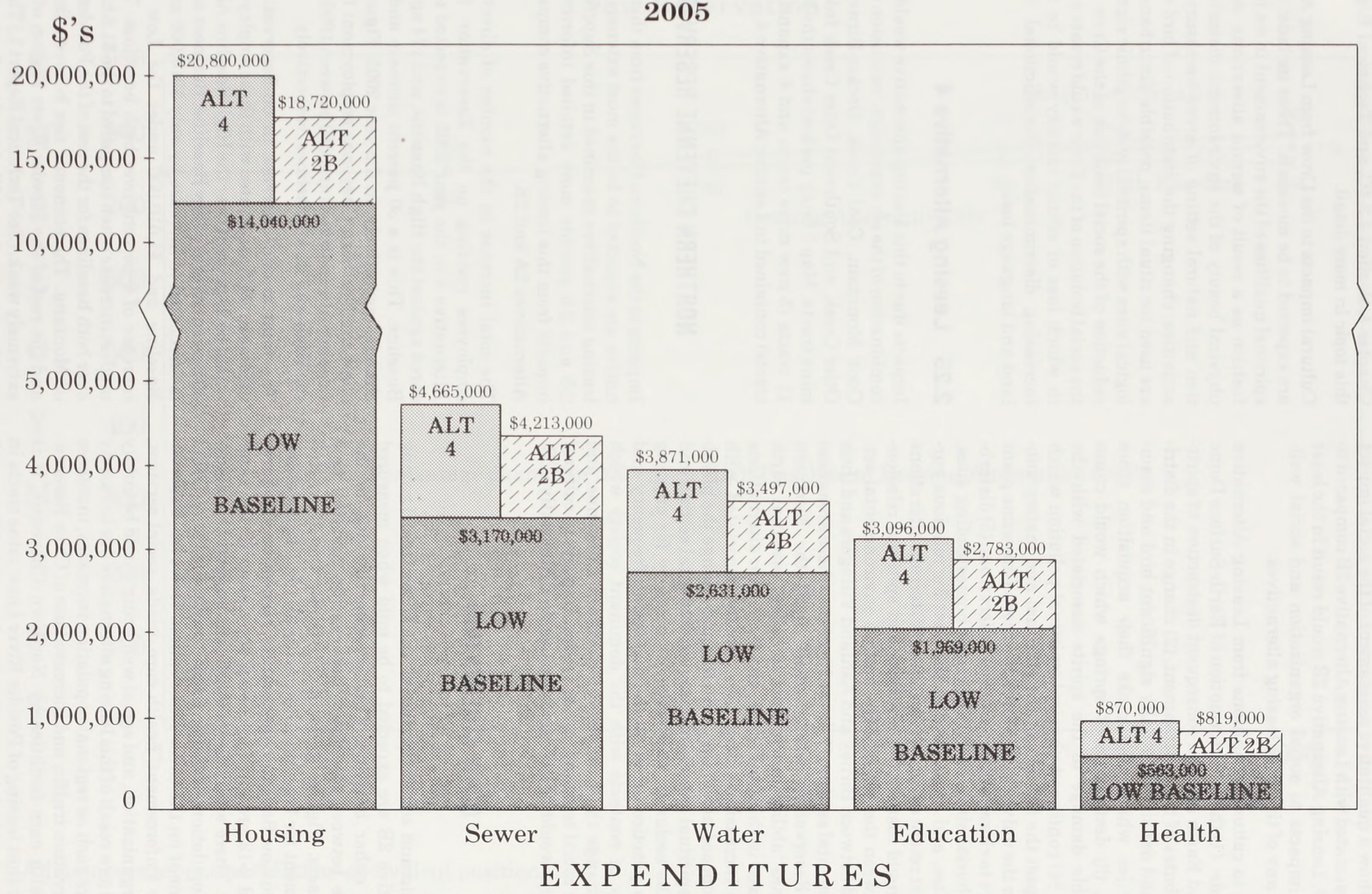
Figure 2-7
FORECASTED NEEDED INCREASES IN MAJOR [1] SERVICE EXPENDITURES
LEASING ALTERNATIVES 2B AND 4 WITH HIGH BASELINE
Northern Cheyenne Reservation
2005



[1]Capital costs only. See Table 4-27 for greater detail.

Source: BLM 1988

Figure 2-8
FORECASTED NEEDED INCREASES IN MAJOR [1] SERVICE EXPENDITURES
LEASING ALTERNATIVES 2B AND 4 WITH LOW BASELINE
Northern Cheyenne Reservation
2005



[1]Capital costs only. See Table 4A-19 for greater detail.

Source: BLM 1988

and 2-6 show a qualitative assessment of the social impact levels associated with Leasing Alternative 2B compared to 2A and 4. Leasing Alternative 2B would result in the least intense impacts to social organization and social well-being of any of the three leasing alternatives.

Impacts to cultural conditions from Leasing Alternative 2B include: (1) the transformation of Earth-Surface Dome into Dead Earth and the consequent destruction of spiritual attributes of the environment, (2) change in the distribution and density of ritually significant bird and mammal species which may make their acquisition more difficult, (3) destruction of springs which would cause irreparable damage to the spirits associated with the springs, (4) continued physical/spiritual pollution which would upset the balance of the spiritual and matter/substance in the universe and force Northern Cheyenne plant collectors to change the areas they collect from, (5) disturbance of burial sites, early Cheyenne homesteading sites, battle sites, and areas used in the past for religious purposes that retain spiritual attributes, (6) terrain alterations which would disturb the physical and spiritual relationship between the Holy Lodge and its environmental setting, and between Birney and Ashland Villagers and their environmental setting, (7) loss of access to these areas east of the Reservation which would limit the Northern Cheyennes' ability to continue to collect essential earth paints used in the Sun Dance, and (8) terrain alternations and the increasing population density associated with these proposed new mines which would change the physical and spiritual aspects of the environmental setting and reduce the seclusion and privacy necessary for ongoing religious practices, and (9) the increasing frequency and diversity of contacts with the dominant society which would change the lifestyles of Northern Cheyenne and increase racial tensions on both sides. Impacts to cultural conditions would be severe under Leasing Alternative 2B.

CROW RESERVATION

Economic and social impacts to the Crow from Leasing Alternative 2B are expected to be mild when measured against either baseline. This is primarily due to the distance between the Crow Reservation and the new mine tracts. Figures 2-9 and 2-10 show the forecasted employment for Leasing Alternative 2B (and 4) under the High and Low Baseline Alternatives, respectively. Figures 2-11 and 2-12 present forecasted population in the same manner. There would be insignificant impacts to employment, population, income, fiscal conditions, and Tribal government on the Crow Reservation. However, Reservation law Enforcement, health care, roads, social services, social organization, and social well-being would be mildly affected as a result of this leasing alternative due to variety of factors such as regional population increases, increases in Reservation traffic, and increased use of Crow Reservation health care facilities by Northern Cheyenne. It is unlikely that leasing of Powder River I new mine tracts in Montana would adversely affect development of Crow coal. Chapter 4, Section 4.2.4C, and Technical Report 5 discuss this topic in more detail.

Cultural impacts to the Crow from Leasing Alternative 2B are expected to be moderate. These include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations; decreasing the physical beauty of the environment; disturbing the isolation and natural setting of areas necessary for religious activities; changing the distribution of bird species which are used for ritual items; possible disturbance to archaeological sites with spiritual and/or ethnic significance; and reduction of the social isolation of the Crow. Reduction in the social isolation of the Crow would create a social setting in which loss of ethnic identity would be reinforced by increasing discrimination, jurisdictional disputes, and land and language loss.

2.25 Leasing Alternative 4

Impacts due to this leasing alternative would result from a combination of the six expansion/extension tracts and the Cook Mountain, Coal Creek, Decker-Birney, Northwest Otter Creek, and Southwest Otter Creek federal coal new mine tracts. Map 5 (map packet) shows the location of the 11 tracts (5 new mine tracts and 6 expansion/extension tracts) contained in Leasing Alternative 4.

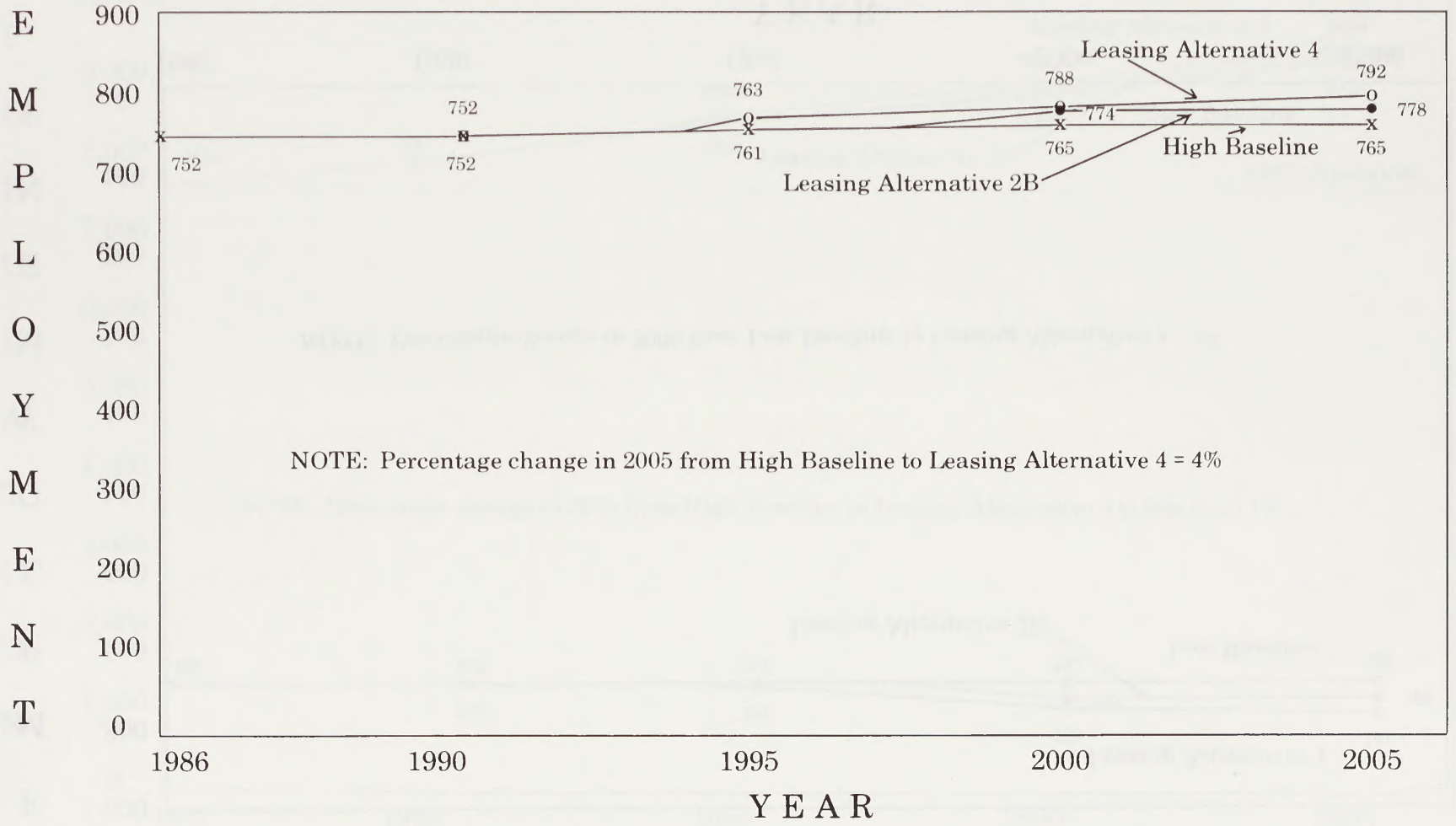
NORTHERN CHEYENNE RESERVATION

Impacts to the Northern Cheyenne from this leasing alternative are expected to be the most extensive of the three leasing alternatives examined in this Supplement. Tables 2-5 and 2-6 provide more detailed information on how impacts from this leasing alternative compare to Leasing Alternatives 2A and 2B.

The total increase in the number of direct and indirect employees residing on the Reservation from Leasing Alternative 4 in the year 2005 is expected to be 168 measured against the High Baseline, and 174 against the Low Baseline. This is a 30 percent increase and a 37 percent change, respectively, in the year 2005. Figures 2-3 and 2-4 show the Northern Cheyenne employment forecast under Leasing Alternative 4 (and 2B) between 1990 and 2005 over the High and Low Baselines, respectively.

The total annual increase in on-Reservation household income in 2005 associated with these employment changes would be 23 percent over the High Baseline Alternative and 30 percent over the Low Baseline. Business activity in 2005 is forecasted to increase by only $910,000 under the High Baseline and $1,010,000 under the Low Baseline, an increase of 6 percent over both baselines. This is a very modest increase when compared to the $1.6 billion increase over both baselines for the rest of the Powder River Region of Montana. The economic ties between the Reservation and the rest of the Powder River Region of Montana are extremely weak. (See Technical Report 1.) This means that the Reservation is not likely to benefit significantly from

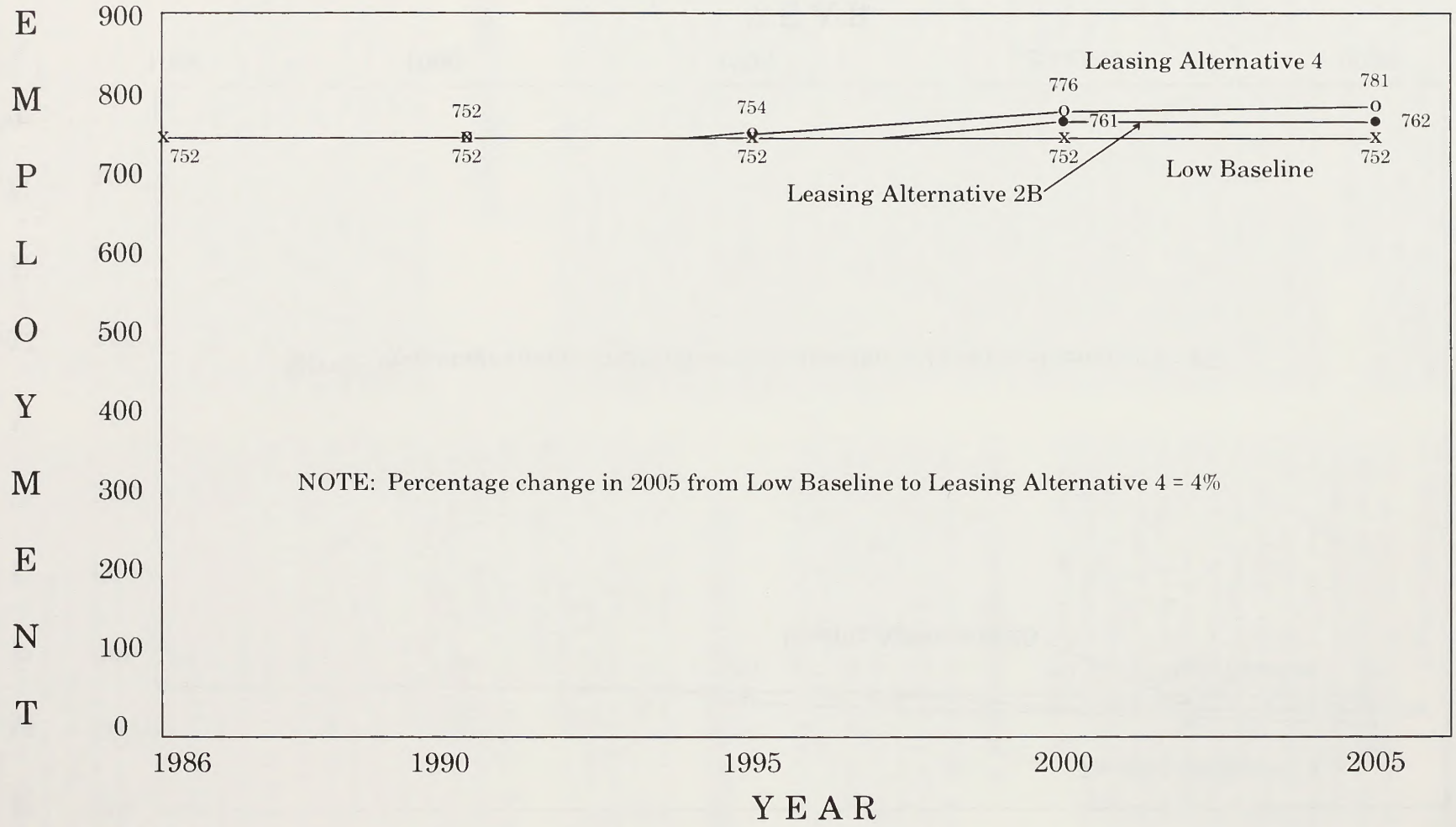
Figure 2-9
EMPLOYMENT FORECASTS [1] — LEASING ALTERNATIVES 2B AND 4 WITH HIGH BASELINE
Crow Reservation



[1]All numbers represent full-time equivalent positions.

Source: BLM 1988

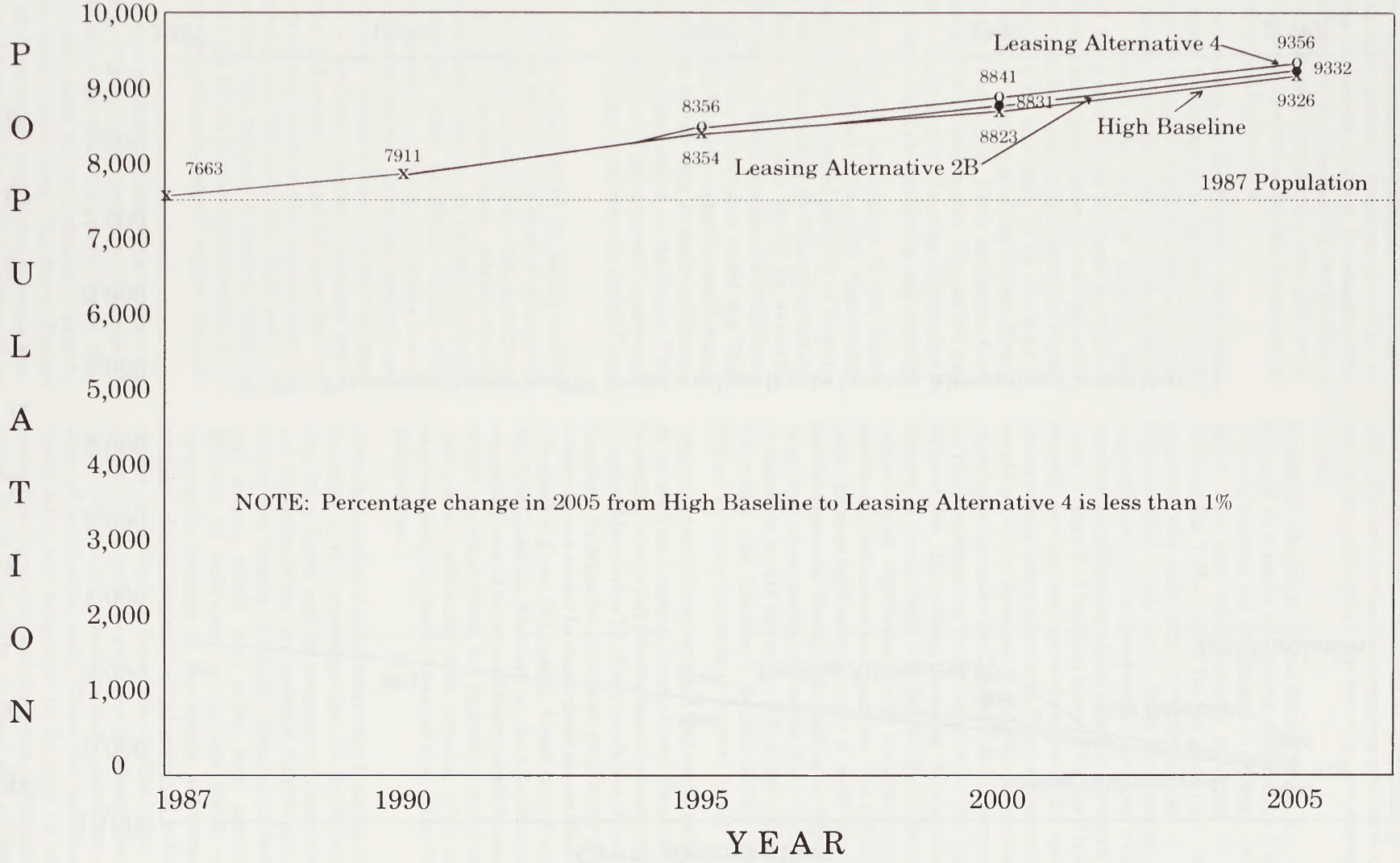
Figure 2-10
EMPLOYMENT FORECASTS [1] — LEASING ALTERNATIVES 2B AND 4 WITH LOW BASELINE
Crow Reservation



[1]All numbers represent full-time equivalent positions.

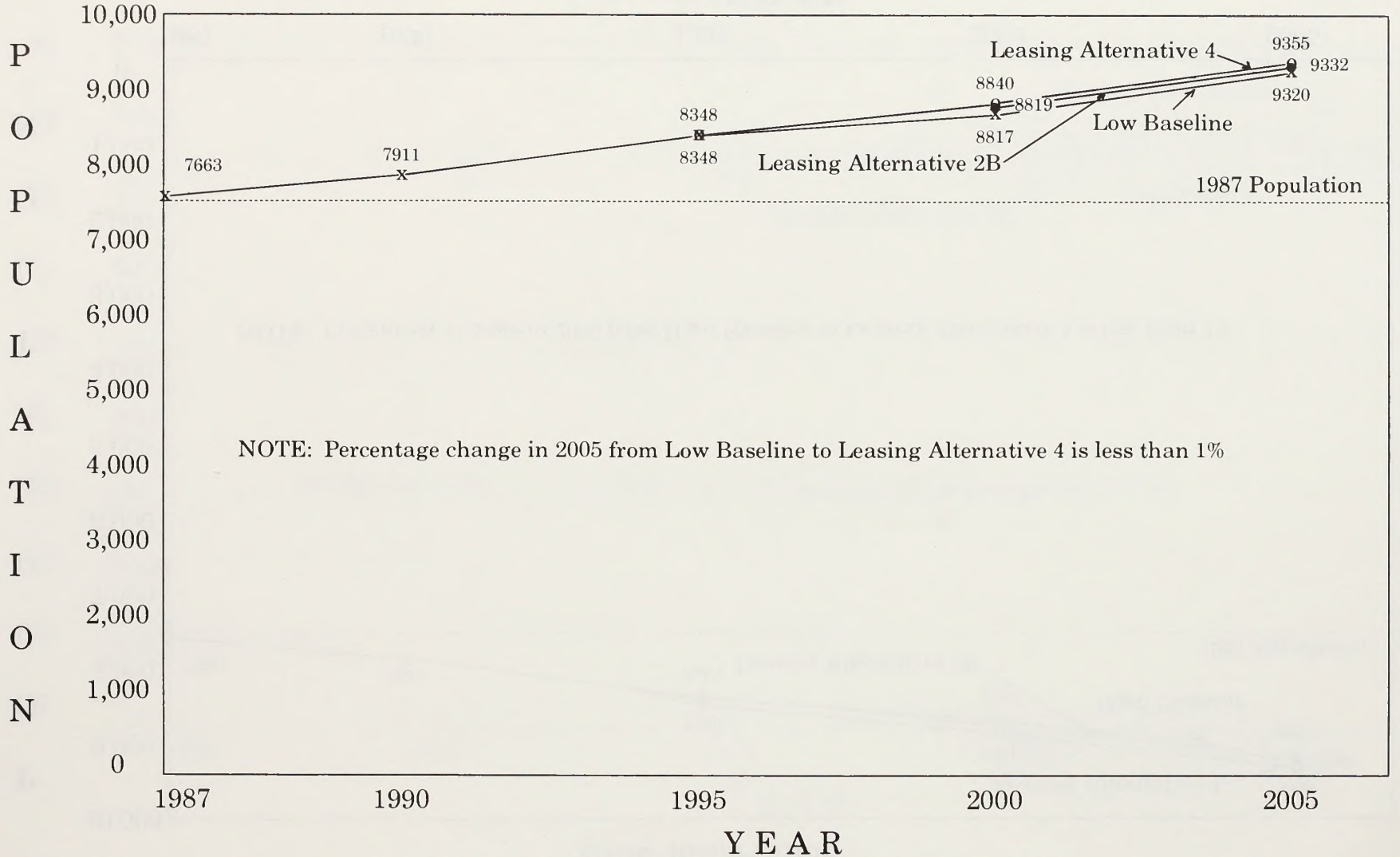
Source: BLM 1988

Figure 2-11
POPULATION FORECASTS — LEASING ALTERNATIVES 2B AND 4 WITH HIGH BASELINE
Crow Reservation



Source: BLM 1988

Figure 2-12
POPULATION FORECASTS — LEASING ALTERNATIVES 2B AND 4 WITH LOW BASELINE
Crow Reservation



Source: BLM 1988

the regional increase in economic activity in terms of jobs, construction contracts, general business activity, or increases in Tribal government revenues. Presumably, this weak economic tie between the Reservation and the rest of the study area would persist through the year 2005, even under the intensive off-Reservation economic development associated with Leasing Alternative 4.

Total population increase on the Reservation due to Leasing Alternative 4 would be 623 people in the year 2005 with the High Baseline Alternative, and 802 with the Low Baseline. This is a 10 percent increase over the High Baseline Alternative and 14 percent over the Low Baseline. See Tables 2-5 and 2-6 for greater detail on these population impacts. The on-Reservation population growth shown in Tables 2-5 and 2-6 would be comprised primarily of Northern Cheyenne returning to take jobs, or in the hope of obtaining jobs, during development of the Decker-Birney (Ashland), Southwest Otter Creek, Cook Mountain, Coal Creek, and Northwest Otter Creek tracts. Figures 2-5 and 2-6 show forecasted population for Leasing Alternative 4 (and 2B) under the High and Low Baselines, respectively.

Under Leasing Alternative 4, inmigration of non-Native Americans onto the Northern Cheyenne Reservation would be constrained by the limited amount of housing available for non-Native Americans. (A reduced amount of housing for non-Native Americans would be available under Leasing Alternative 4 because some of it would have been utilized by non-Native Americans under the High Baseline Alternative.) The housing situation could change if the Tribe or a private entity were to make additional housing available on the Reservation in the future. This would require the commitment of development capital and, in the case of Tribal Trust Land, action by the Tribal Council.

Services that are likely to be affected by people moving onto the Reservation as part of this leasing alternative include housing, health care, education, fire protection, social services (e.g., child/spouse abuse, welfare, alcohol treatment), roads, and law enforcement. Impacts on health care and social services would be almost totally from Native Americans because non-Native Americans are not eligible for these services except for urgent medical care and ambulance service. Tables 2-5 and 2-6 provide more detail on impacts to Northern Cheyenne services due to Leasing Alternative 4. Figures 2-7 and 2-8 show the forecasted needed increases in major service expenditures for Leasing Alternative 4 (and 2B) under the High and Low Baselines, respectively. See Chapter 4, Section 4.2.6N or Chapter 4A, Section 4.2.6N for further information on the impact to services, including increased capital expenditures required.

Impacts to Reservation services and infrastructure are also likely from Leasing Alternative 4 because of the large off-Reservation population growth that would result from development of the new mine tracts contained in Leasing Alternative 4. The total three-county (Big Horn, Powder River, Rosebud) off-Reservation population increase associated with Leasing Alternative 4 is 3,737 (11 percent) over the High Baseline Alternative and 2,600 (8 percent) over the Low Baseline. This level of population growth would affect Reservation roads (commuter and truck traffic), law and order, and social services (e.g., counseling), among others.

Northern Cheyenne Tribal revenues are not expected to increase as a result of Leasing Alternative 4 since Tribal revenue sources are not linked to regional coal development. This can create serious problems for the Tribe because the Tribe would, for the most part, be unable to generate any additional revenues needed to respond to impacts that would occur from development. However, expenditures for on-Reservation services would have to increase significantly under Leasing Alternative 4 for services to remain at baseline levels. Chapter 3 indicates that several services and some elements of the infrastructure are currently below standards. These substandard services would probably continue to deteriorate moderately from existing levels under the Low Baseline Alternative. A more marked deterioration would occur under the High Baseline Alternative. By adding Leasing Alternative 4 to the Region, it is very likely that the Northern Cheyenne Reservation would experience severe long-term impacts to its service and infrastructure systems. It is unlikely the Tribe could finance sufficient revenue to merit these increased service demands through its existing revenue structure. It is unlikely that leasing of Powder River I new mine tracts in Montana would adversely affect the value of Northern Cheyenne coal. Chapter 4, Section 4.2.4C, and Technical Report 5 discuss this subject in more detail.

Impacts to social organization and social well-being would be severe from Leasing Alternative 4. These impacts would be similar in type but greater than those experienced under Leasing Alternative 2A. The cumulative effects of the High Baseline Alternative combined with those from Leasing Alternative 4 would be much more severe than with either alternative alone. If Leasing Alternative 4 occurred with the Low Baseline Alternative, the total impacts to social organization and social well-being would be somewhat less severe. In either event, the impacts to social organization and social well-being with Leasing Alternative 4 are expected to be the most intense of any of the three leasing alternatives.

Impacts to cultural conditions from Leasing Alternative 4 include: (1) the transformation of Earth-Surface Dome into Dead Earth and the consequent destruction of spiritual attributes of the environment, (2) change in the distribution and density of ritually significant bird and mammal species which may make their acquisition more difficult, (3) destruction of springs which would cause irreparable damage to the spirits associated with the springs, (4) continued physical/spiritual pollution which would upset the balance of the spiritual and matter/substance in the universe and force Northern Cheyenne plant collectors to change the areas they collect from, (5) disturbance of burial sites, early Cheyenne homesteading sites, battle sites, and areas used in the past for religious purposes that retain spiritual attributes, (6) terrain alterations which would disturb the physical and spiritual relationship between the Holy Lodge and its environmental set-

ting, and between Birney and Ashland Villagers and their environmental setting, (7) loss of access to these areas east of the Reservation which would limit the Northern Cheyennes' ability to continue to collect essential earth paints used in the Sun Dance, (8) terrain alterations and the increasing population density associated with these proposed new mines which would change the physical and spiritual aspects of the environmental setting and reduce the seclusion and privacy necessary for ongoing religious practices, and (9) the increasing frequency and diversity of contacts with the dominant society which would change the lifestyles of Northern Cheyenne and increase racial tensions on both sides. Impacts to cultural conditions would be severe under Leasing Alternative 4.

CROW RESERVATION

Economic and social impacts to the Crow from Leasing Alternative 4 are expected to be either mild or moderate when measured against either baseline. This is primarily due to the distance between the Crow Reservation and the new mine tracts. There would be insignificant impacts to employment, population, income, fiscal conditions, and Tribal government on the Crow Reservation. Figures 2-9 and 2-10 show the employment impacts on the Crow Reservation from Leasing Alternatives 2B and 4 under the High and Low Baselines, respectively. Figures 2-11 and 2-12 show the Crow Reservation population impacts under the High and Low Baselines, respectively, for Leasing Alternatives 2B and 4. However, Reservation housing, law enforcement, health care, education, roads, social services, social organization, and social well-being would all be mild to moderately affected as a result of this leasing alternative due to such factors as regional population increases, increases in Reservation traffic, and increased use of Crow Reservation health care facilities by Northern Cheyenne. It is unlikely that leasing of Powder River I new mine tracts in Montana would adversely affect the value of Crow coal. Chapter 4, Section 4.2.4C, and Technical Report 5 discuss this topic in more detail.

Cultural impacts to the Crow from Leasing Alternative 4 are expected to be moderate. These impacts include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations; decreasing the physical beauty of the environment; disturbing the isolation and natural setting of localities necessary for religious activities; changing the distribution of bird species which are used for ritual items; possible disturbance to archaeological sites with spiritual and/or ethnic significance; and reduction of the social isolation of the Crow. Reduction in the social isolation of the Crow would create a social setting in which loss of ethnic identity would be reinforced by increasing discrimination, jurisdictional disputes, and land and language loss.

CHAPTER 3
AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the current economic, social, and cultural conditions on both the Northern Cheyenne and Crow Reservations. The analysis for the Northern Cheyenne Tribe is presented in Sections 3.1.N through 3.10.N. See Figure 3-1 for a map of the Northern Cheyenne Reservation. The Crow analysis follows the Northern Cheyenne analysis and is presented in Sections 3.1.C through 3.10.C. As a result of the greater distances between the Crow Reservation and the Powder River Round I new mine tracts, the level of social, economic, and cultural impacts to the Crow Reservation were found to be smaller than those to the Northern Cheyenne Reservation. Therefore, the level of detail presented for the Crow Reservation is less than for the Northern Cheyenne Reservation.



- WOHEHIV -
The Morning Star

NORTHERN CHEYENNE RESERVATION



- WOHEHIV -
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3.1.N Employment

The economy and related employment on the Northern Cheyenne Reservation can be broken down into basic, or export industries, and other industries. Basic or export industries on the Northern Cheyenne Reservation are agriculture, manufacturing, construction, mining, forest and fisheries, and the federal government. These industries export goods and services outside the area. The earnings from basic or export industries represent an influx of new money to the Reservation which is necessary if the economy is to expand and grow. The agriculture sector consists primarily of cattle production on Reservation lands. Manufacturing is primarily the production of lumber from Reservation sawmills. Construction consists mostly of companies working on projects off the Reservation.

Employment in basic industries on the Northern Cheyenne Reservation in 1980 was low. Employment of Reservation residents in agriculture accounted for only 8 percent of the total employment; construction accounted for 5 percent; manufacturing, 6 percent; forest and fisheries, 5 percent; and mining, 3 percent. Services and public administration were the largest sectors with 40 percent and 23 percent, respectively, of the total employment. See Table 3-1 for 1980 employment by industry.

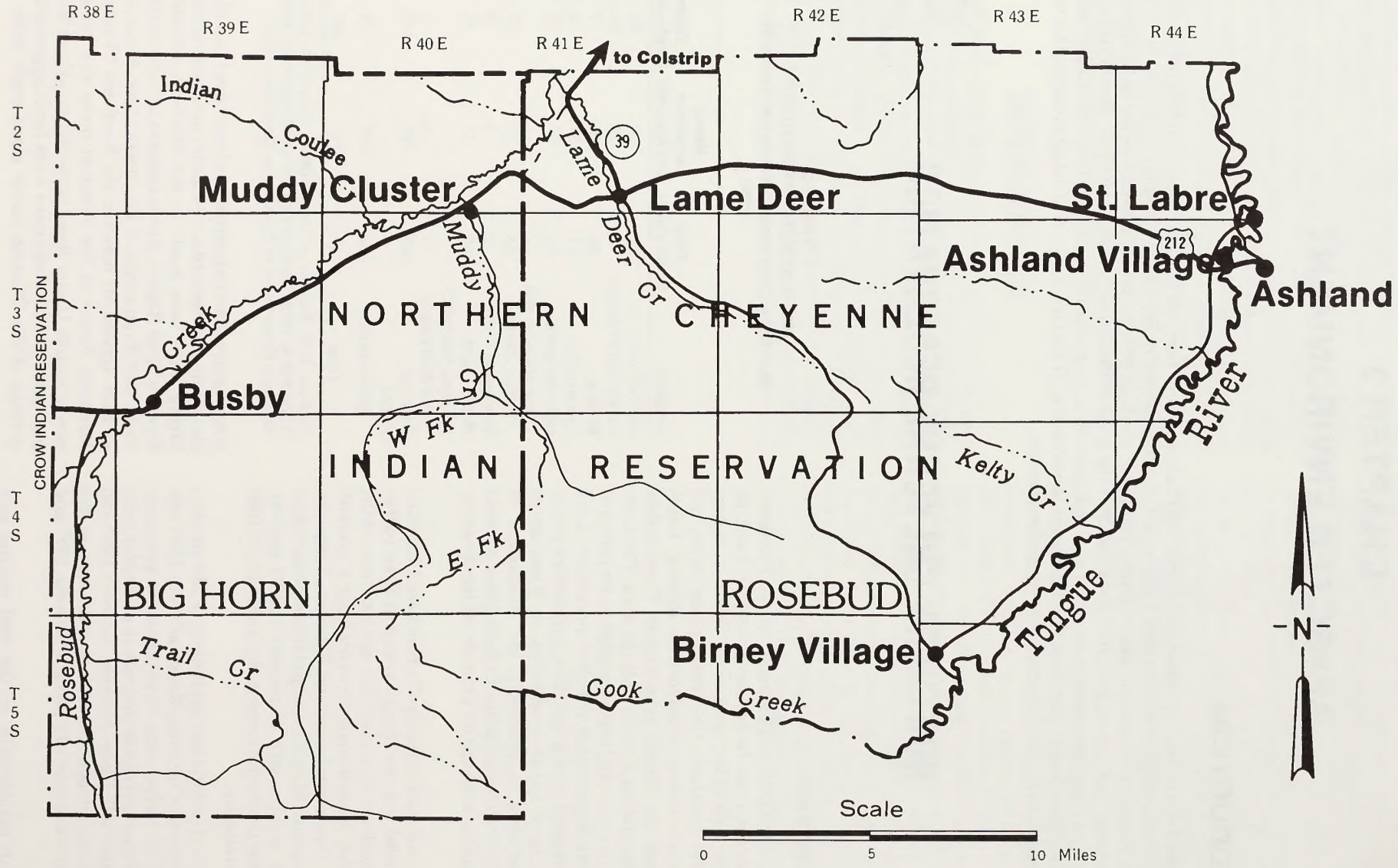
The estimated level of full-time equivalent (FTE) employment on the Northern Cheyenne Reservation in 1986 was 515. Projections of budget cuts in government programs and declining Tribal revenues indicate that employment on the Reservation will likely decrease between 1987 and 1990. Projected employment in 1990 is estimated at 469 FTE jobs. This is a decrease of 9 percent between 1987 and 1990.

Native American employment in the coal mining and power generation industries has been small outside of special mining agreements. Two major agreements for special hiring have been made in the Montana portion of the Powder River Region. Agreements exist between the Crow Tribe and Westmoreland Resources at the Absaloka mine, and an agreement between the Northern Cheyenne and Montana Power at the Rosebud mine and the Colstrip power plants. Under these agreements, approximately 50 percent of the Absaloka mine work force, approximately 12 percent of the Colstrip power plant work force and 5.7

TABLE 3-1
EMPLOYMENT BY INDUSTRY
Northern Cheyenne Reservation Residents
1980

Industry	Total Employment	Native American Employment	Other Employment
Agriculture	92	33	59
Forest and Fisheries	52	29	23
Mining	36	29	7
Construction	51	51	0
Manufacturing	63	47	16
Transportation and Public Utilities	52	25	27
Wholesale Trade	0	0	0
Retail Trade	68	27	41
Finance, Insurance, and Real Estate	6	6	0
Services	446	276	170
Public Administration	262	238	24
Total	1,128	761	367

Source: U.S. Bureau of the Census, Data from Summary Tape File 4, 1985. Compiled by Office of Economic Analysis, Montana Department of Commerce, December 1985.



NORTHERN CHEYENNE INDIAN RESERVATION

Figure 3-1

percent of the Rosebud mine work force were Native Americans in 1985. Employment of Native Americans outside of these agreements has been around 3.5 percent in recent years. In 1985, a total of 47 Native Americans, out of a work force of 1,244, were employed in mining outside of special agreements.

Employment on the Northern Cheyenne Reservation has fluctuated widely in the past 15 years. Total employment of Native Americans on the Northern Cheyenne Reservation and in the area adjacent to the Reservation near St. Labre in 1985 was 725, 18 percent less than the level in 1980. Major employers on the Reservation are the Tribal government and the school system.

In 1986, unemployment on the Northern Cheyenne Reservation exceeded 50 percent. Reservation population has grown substantially over the past decade while job opportunities have been declining. A net outmigration of working-age people and their families from the Reservation has kept the unemployment rate from being higher in recent years. The only known prospect for increased employment on the Reservation is the reopening of the Ashland sawmill. Plans include employing approximately 100 workers, primarily Northern Cheyenne. If the sawmill is able to produce at capacity, it will have a significant effect on the unemployment rate of the Reservation. (See Technical Report 1.)

A household survey done on the Reservation in 1977 showed that the number of adults with at least a high school education approached the levels shown for Big Horn and Rosebud Counties in the 1980 Census. Thus, many Native Americans on the Cheyenne Reservation should have been as qualified as non-Native Americans in Big Horn and Rosebud Counties for positions not requiring a college degree or specific experience. Labor force participation rates for the Northern Cheyenne Reservation were also similar to Big Horn and Rosebud County rates in 1980. However, unemployment rates on the Northern Cheyenne Reservation have been far higher than for Big Horn and Rosebud Counties. Unemployment rates did not significantly decrease on the Reservation during the development of the existing mines in the Montana portion of the Powder River Region.

3.2.N Population

The Northern Cheyenne Reservation is located in Rosebud and Big Horn Counties in the Powder River Region of Montana. These counties experienced significant population growth in the 1970s and early 1980s due to coal development, primarily the development of mines and power generation facilities at Colstrip located about 10 miles north of the Northern Cheyenne Reservation boundary in Rosebud County. Between 1970 and 1984, the population of Rosebud County doubled and the population of Big Horn County grew by 12 percent. Much of the population growth in Rosebud and in Big Horn Counties was the result of inmigration of Colstrip workers and their families. Since 1984, the population of Rosebud County has declined while Big Horn County has continued to grow slowly. Population figures for counties in the Montana portion of the Powder River Region are shown in Table 3-2.

The population of the Northern Cheyenne Reservation has grown substantially over the past decade. A combination of a high natural increase of the Native American population, and a return-migration of Native Americans searching for employment during the development of mining and power generation projects in the region were responsible for this growth. By the mid-1980s, the Reservation began experiencing a net outmigration of population. This outmigration slowed the rate of population growth on the Reservation but did not offset the natural increase of the Native American population on the Reservation. There are approximately 1,600 members of the Northern Cheyenne Tribe who live off-Reservation. The net outmigration of Northern Cheyenne Tribal members is estimated to be approximately 30 per year.

TABLE 3-2
POPULATION GROWTH
Montana Portion Powder River Region

	1970	1980	1983	1986
Big Horn	10,100	11,100	11,300	11,700
Powder River	2,900	2,500	2,500	2,400
Rosebud	6,000	9,900	13,500	12,300
Treasure	1,100	1,000	1,000	1,000
Custer	12,200	13,100	13,500	13,200
Yellowstone	87,400	108,000	116,800	120,100
Crow Reservation	NA	5,920	NA	7,556
Northern Cheyenne Reservation	2,895	3,745	NA	4,308

NA — Not Available.

Source: U.S. Bureau of Census, BLM, 1988

Increases in the non-Native American population on the Reservation were limited in times of economic growth by the lack of available housing. During the growth of the mid-1970s, long-term occupancy at Reservation trailer courts increased, primarily non-Native Americans who were employed in coal-related projects in the Colstrip and Decker areas off-Reservation. As the construction phases of area projects ended, occupancy at Reservation trailer courts declined. The majority of other non-Native Americans residing on the Reservation are people who work for the Tribe, Bureau of Indian Affairs (BIA), or Indian Health Service (IHS), own businesses on the Reservation or are married to Northern Cheyenne Tribal members. This portion of the non-Native American Reservation population has not grown at the level of the Native American population.

The natural increase of the Native American population is likely to continue at a rate greater than for the State of Montana as a whole. The median age on the Reservation is 19.1 compared to the median age of 29.6 for the State of

Montana. This means that a larger proportion of the Native American population on the Northern Cheyenne Reservation is in its prime child-bearing years.

Evidence indicates that return-migration of Native Americans occurred during the construction of Colstrip Units 1 and 2 (Feeney, et al., 1986). Since the completion of Colstrip Units 3 and 4, the trend has reversed and more Native Americans have been leaving the Reservation than returning. Some of the migration on and off the Reservation has been between the Reservation and the St. Labre Mission, and where some low cost housing is available. Due to the housing shortage on the Reservation, some people utilize the available housing at St. Labre while waiting to obtain housing from the Northern Cheyenne Housing Authority.

There are currently five communities on the Northern Cheyenne Reservation: Ashland Village, Birney Village, Busby, Lame Deer, and Muddy. Of these communities, Lame Deer is the largest with approximately 2,000 people in the town and surrounding district. Lame Deer is the site of the Tribal government offices, the IHS Clinic, the BIA Northern Cheyenne Agency, and most other Reservation services. Busby, with a population of 569 in the town and surrounding district, is the site of the BIA-operated elementary and high school. Birney Village, with a population of 166 in the town and surrounding district, is the most isolated community and therefore the most traditional community on the Northern Cheyenne Reservation. Ashland Village, with a town and district population of 392, and Muddy, with a town and district population of 173, are primarily clusters of Northern Cheyenne Housing Authority residences. Retail businesses on the Reservation are limited to the towns of Lame Deer and Busby. See Figure 3-2 for the approximate boundaries of each of the districts on the Northern Cheyenne Reservation.

Nearby off-Reservation communities such as Colstrip, Ashland, and Broadus provide services not found on the Reservation, as well as alternatives to retail businesses available on the Reservation. During the coal development of the 1970s and early 1980s, growth in these communities affected the residents of the Northern Cheyenne Reservation. Contacts between the Native Americans and non-Native Americans increased because of the large number of non-Native Americans who moved into the area. Traffic across the Reservation increased due to the developments at Colstrip and Decker, and the Reservation became less isolated. Table 3-3 shows the estimated 1987 population of these communities adjacent to the Northern Cheyenne Reservation.

TABLE 3-3
POPULATION OF ADJACENT COMMUNITIES
Northern Cheyenne Reservation
1987

Community	Population
Ashland/St. Labre	513
Colstrip	1,581
Broadus	751

Source: BLM, 1988

3.3.N Income

The current level of household income on the Reservation is estimated at $17,960,000. This represents income to all households on the Northern Cheyenne Reservation and includes wages earned as well as transfer payments. The level of household income is projected to decline between 1987 and 1990 as Tribal revenue and BIA budgets decline. This decline would be 9.5 percent from 1987 to 1990 for the Reservation compared to a decline of 1.7 percent projected for the entire region. Much of the household income on the Reservation is tied to spending by the Northern Cheyenne Tribe and the Bureau of Indian Affairs budgets. As these budgets decline, the ability of the Tribe to employ people diminishes; as employment declines, the level of household income also declines.

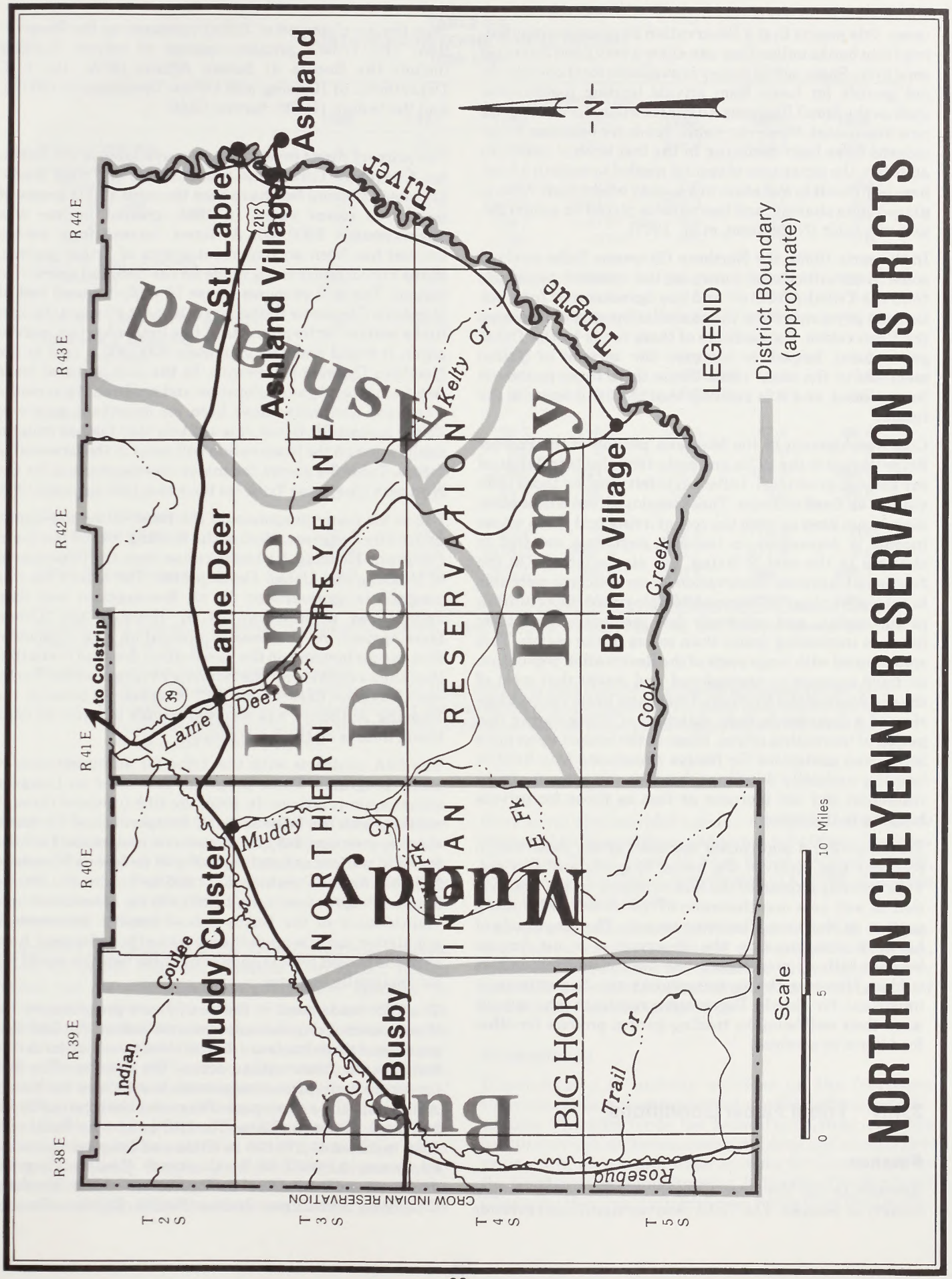
Per capita household income on the Northern Cheyenne Reservation is much lower than the level for the rest of the Montana portion of the Powder River Region. The per capita household income on the Reservation was $4,280 in 1986. This level represents only 39 percent of the regional per capita household income of $10,877. Median family income for Native Americans on the Northern Cheyenne Reservation was $5,278 in 1969 and $12,239 in 1979. This was a decrease of 7 percent in constant dollars over that time period.

Data collected in 1986 for the Bureau of Land Management (BLM) input/output model shows that there is a weak link between the level of household income and the level of business activity on the Reservation. The link between changes in household income and the resulting changes in business activity is an important measure, because it shows the ability of the Northern Cheyenne economy to take advantage of regional growth and to capture the household income earned by Reservation residents. Household income is, for the most part, spent off-Reservation. That income which is spent on the Reservation does not circulate long before it also flows off-Reservation. This means that increases in household income will have little effect on business activity on the Reservation.

It is estimated that exports from the household and business sectors exceeded imports by approximately $241,000 in 1986. This represents a very small net influx of new money into the Reservation economy. This leaves little capital available for the expansion or development of businesses on the Reservation. Without more or larger businesses on the Reservation, large portions of Reservation income will continue to flow off-Reservation.

Business development on the Reservation faces two financial barriers: a lack of capital and a lack of collateral. The lack of capital on the Reservation means that businesses must try to borrow money from off-Reservation sources to expand or develop new businesses. However, to borrow money a business must put up collateral. The divided legal jurisdiction of the Reservation makes it difficult if not impossible for a bank to foreclose on property on the Reservation. Therefore, banks in general, will not accept property on the Reservation as collateral for a loan. In most

Figure 3-2


NORTHERN CHEYENNE RESERVATION DISTRICTS
LEGEND
District Boundary (approximate)
N
Scale
0
5
10 Miles
Ashland
St. Labre
Ashland Village
Tongue River
Kelty Cr
Lame Deer
Deer Cr
Lame
Birney Village
Cook Creek
to Colstrip
39
212
Muddy Cluster
Muddy
Coulee
Indian
Busby
Busby Cr
Trail Cr
Rosebud
NORTHERN CHEYENNE INDIAN RESERVATION
Lame Deer
Birney
Muddy
Busby
BIG HORN
CROW INDIAN RESERVATION
R 38 E
R 39 E
R 40 E
R 41 E
R 42 E
R 43 E
R 44 E
T 2 S
T 3 S
T 4 S
T 5 S

cases, this means that a Reservation business cannot borrow from banks unless they can show a very good financial condition. Some public money is available for those who do not qualify for loans from private lending institutions, such as the Small Business Administration, for developing new businesses. However, public funds for business development have been declining in the last several years. In addition, the expansion of capital needed to sustain a business is difficult to maintain in a society where high value is placed upon sharing, and less value is placed on accumulation of wealth (Nordstrom, et al., 1977).

In the early 1980s, the Northern Cheyenne Tribe received some large influxes of money as the result of payments from the Tribal-ARCO oil and gas agreement or from settlement payments from the cancellation of coal leases on the Reservation. Expenditure of these funds by the Tribal government helped to increase the income of Tribal members in the early 1980s. Since then, these payments have ceased, and it is unlikely that they will occur in the future.

Coal development in the Montana portion of the Powder River Region in the 1970s and early 1980s led to inflation of the general price level. Inflation is felt most by those individuals on fixed incomes. Those employed, but whose earnings do not keep up with the cost of living and those whose income is dependent on transfer payments not tied to changes in the cost of living, are also affected. On the Northern Cheyenne Reservation, fewer residents were able to take advantage of increased employment opportunities in the region, and relatively few residents found their incomes increasing faster than prices in the region. This was coupled with large parts of the Reservation population on fixed incomes or unemployed and meant that most of the residents of the Northern Cheyenne Reservation experienced a decrease in their standard of living during this period of increasing prices. Some of the impact upon price levels was moderated for Native Americans who lived in housing authority dwellings, because the rates for these residences did not increase as fast as those for private housing in the region.

Traditionally, a significant segment of the Reservation economy has involved the barter of goods and services. This is partly a result of the lack of money on the Reservation as well as a manifestation of the traditional sharing pattern in Northern Cheyenne society. The magnitude of barter transactions on the Reservation is not known because little or no research has been conducted on this subject. However, the barter economy may be particularly important for elderly Reservation residents who supplement their well-being by trading garden produce for other food items or services.

3.4.N Tribal Fiscal Conditions

Revenue

Revenue to the Northern Cheyenne Tribe comes from a variety of sources. The Tribe receives significant revenue from the development of Tribal resources on the Reservation. The Tribe's primary sources of federal funding include the Bureau of Indian Affairs (BIA), the U.S. Department of Housing and Urban Development (HUD), and the Indian Health Service (IHS).

The primary direct revenue sources available to the Northern Cheyenne Tribe come from the use of Tribal lands. Livestock grazing fees have been the most stable source of income in recent years. In 1986, grazing income was approximately $300,000. At times, income from timber harvest has been an important source of Tribal income. Plans are currently being made for the Ashland sawmill to reopen. The mill proposes to use 10 million board feet of Northern Cheyenne timber over the next 10 years if it can find a market for its products. If this timber harvest were to occur, it would add approximately $200,000 a year to the Northern Cheyenne's revenue. In the past, mineral lease fees from oil and gas exploration and settlement payments from coal companies have been an important source of Tribal income. However, it is unlikely that further mineral exploration on the Reservation will occur in the foreseeable future. Table 3-4 shows the major revenue sources for the Northern Cheyenne Tribe for the years 1980 through 1986.

Funds for many programs on the Reservation are appropriated by Congress. Most of the funding for the Northern Cheyenne Housing Authority comes from the Department of Housing and Urban Development. The money for this program is appropriated for all Reservations and then apportioned to Reservations by Housing and Urban Development. An increase in population and coincident demand for housing on the Reservation does not mean that the funds available for the Housing Program on the Northern Cheyenne Reservation will increase. At present, the Housing Authority has received money to build 80 additional houses on the Reservation.

The BIA contracts with the Tribe for administration of many programs. These programs are based on Congressional appropriations. In 1986, the BIA provided through contract with the Tribe $108,000 for operation of the social services program, $491,000 for general assistance, $252,000 for child welfare assistance, $500,000 for law enforcement, $254,000 for scholarships, $124,000 for courts, $51,000 for housing improvement, and $290,000 for operational and maintenance of the Busby school facility. Increases in population may increase the amount of benefits paid; however, the budget for administering these benefits would not automatically increase.

The IHS funds most of the health care programs on the Reservation. Congress appropriates money for IHS Programs and these funds are then divided to cover health care facilities on Reservations across the country. The IHS funds are appropriated to provide health care for Native Americans and are not part of the revenues received by the Northern Cheyenne Tribe. The IHS budget for fiscal year 1986 included $1,278,000 in clinic and hospital operating expenses, $1,066,000 in Contract Health Program expenses, and $208,184 for operation of the Northern Cheyenne ambulance. Indian Health Service allocates

TABLE 3-4
NORTHERN CHEYENNE TRIBAL INCOME
1980-1986

	Fiscal Year						
	1980	1981	1982	1983	1984	1985	1986
Interest Income	0.6	55.5	284.8	277.1	240.4	122.3	63.3
Leases and Rentals							
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil and Gas	0.0	1359.3	1367.1	1286.5	1294.3	0.0	0.0
Land	0.0	0.0	94.7	41.2	5.2	5.2	5.1
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permits and Licenses							
Grazing	338.1	275.0	288.3	302.2	298.2	250.0	300.1
Other	2.2	3.2	1.3	1.2	0.5	0.0	0.0
FHA and Land Loan Payments	0.0	-136.5	-154.1	-158.5	-151.5	-151.5	-149.4
Royalties & Bonuses							
Oil and Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sales							
Timber	350.7	110.0	38.2	118.2	182.3	67.7	69.6
Other	7.0	0.0	0.0	0.0	0.0	0.0	6.5
Indirect Fees	250.0	250.0	300.0	294.0	35.0	381.3	338.0
Fees and Fines	12.5	12.5	54.0	55.5	54.4	0.0	69.6
Claims & Settlements							
Revenue Sharing	93.4	93.4	93.4	0.0	393.4	119.3	0.0
Other	77.5	12.0	3816.0	2667.0	1666.7	677.8	0.0
Other Tribal Income	0.0	0.0	278.2	360.9	310.7	166.7	245.7
Total	1132.0	2034.4	6461.9	5245.3	4324.4	1638.8	943.4

Source: File copies of approved Northern Cheyenne Tribal Budgets, Tribal Treasurer and Tribal Finance Officer 1986 (Feeney et al., 1986).

Notes: Numbers in thousands of dollars.
"Other Claims and Settlements" figures for 1982, 1983, and 1985 include coal claims and lease settlements. Negative dollar figures for FHA and Land Loan Payments indicate payments for loans obtained by the tribe to purchase Reservation lands which are not in tribal ownership. When these loans are paid off, other loans will be made for this purpose.

funds for facilities based, in part, on the service population of the facility and the number of primary-care-provider visits. Therefore, it is possible that funding for IHS programs on the Northern Cheyenne Reservation may increase as the population of Native Americans on the Reservation increases.

A source of aid available to the Tribe during coal development are grants from the Montana Coal Board. Indian Tribes can compete with state government agencies for grants up to a limit of 7 percent of the coal severance tax funds available for local impact aid. Funds for local impact aid are 6.65 percent of the total coal severance tax collections. For each $1 million in coal severance tax collected, $66,500 is available for local impact aid and a maximum of $4,655 is available for state agencies and Indian Tribes. The Northern Cheyenne Tribe has received four Coal Board grants in the past. For construction of the Lame Deer Community Center, the Coal Board approved two grants totaling $365,637. The Northern Cheyenne Tribe contributed $329,308 to the community center project. The Coal Board also provided a grant of $150,000 to Dull Knife Memorial College with an additional $174,000 in Northern Cheyenne Tribal funds. A Coal Board grant of $38,000, combined with a Tribal contribution of $10,900, was made for a Coal Impact Study.

The State of Montana receives 50 percent of the 12.5 percent federal royalty on federal coal mined in Montana. These funds are presently earmarked by the legislature to help fund the school foundation program which assists all of the public schools in the state.

Expenditures

Expenditures to provide services on the Northern Cheyenne Reservation are made by many different organizations. The IHS funds the Lame Deer Clinic, contract health services, ambulance services, drug and alcohol programs, and sewage and water systems for houses built by the Northern Cheyenne Housing Authority. The Northern Cheyenne Housing Authority uses funds from the Depart-

ment of Housing and Urban Development to build housing for Northern Cheyenne Tribal members. County governments provide some service on the Reservation. Rosebud County maintains a welfare office in Lame Deer to administer food stamps, aid to families with dependent children, and medicaid eligibility programs. The county is also responsible for street maintenance in Lame Deer. Big Horn County provides welfare services similar to Rosebud County, maintenance of Secondary Road 314 which is a county road, and solid waste collection from canisters in Muddy and Busby. The BIA provides services related to management of Tribal lands, law enforcement, road construction and maintenance, and contracts with the Tribe to provide other services to Tribal members. The Northern Cheyenne Tribal government provides services to operate the government, and operates contracts with the BIA to provide specific services such as the social service programs and the Tribal court, contracts with the state to provide services such as the commodity program and, as budgets permit, provides additional funding for programs such as the Tribal court, ambulance services, drug and alcohol treatment, and law enforcement.

Tribal government has limited control of its own budget. The Tribal government is encouraged by the BIA to carry over enough funds to cover certain minimum expenses which occur every year. The amount carried over equals approximately 30 percent of total Tribal income on the average. This is necessary because the Tribe has difficulty borrowing money and must leave a balance to meet its obligations. Tribal income is spent on the operation of Tribal government and its programs. In addition, the Tribe contracts with the BIA to operate several programs on the Reservation. Principle among these is the welfare program and the Tribal courts. Table 3-5 shows estimates of Tribal government expenditures for fiscal years 1980 through 1986.

Services provided by the Tribe or by other sources for the Tribe are, in general, not adequate for the present population. For those services which are not adequate, an expenditure would be necessary to bring the service up to standard. The primary deficit service is housing; a demand for 420 additional houses exists after the 80 units currently planned are built. It would require approximately $21.8 million to satisfy this housing demand. See Chapter 3, Section 3.6.N for additional expenditures that would be necessary to provide adequate service coverage for the 1987 population.

TABLE 3-5
NORTHERN CHEYENNE TRIBAL EXPENDITURES
1980-1986

	Fiscal Year						
	1980	1981	1982 (est.)	1983 (est.)	1984 (est.)	1985 (est.)	1986 (est.)
Salaries and Benefits	293.1	355.2	431.4	552.0	524.6	476.9	353.2
Staff Travel	63.2	100.0	133.6	100.0	81.0	60.0	19.0
Legal and Professional	25.0	37.8	110.0	91.3	243.8	92.0	95.0
Projects and Programs	63.7	87.4	169.5	172.2	103.8	64.2	49.0
Committee Expenses	90.4	186.8	245.0	140.0	120.0	92.0	53.1
Other Operating Expenses	88.3	88.0	150.0	224.5	201.4	209.0	115.0
Bldgs/Utilities/Main	29.9	75.0	125.0	100.0	100.0	284.4	90.0
Capital Investments	.0	14.7	14.7	0.0	0.0	0.0	0.0
Equipment	.0	0.0	0.0	0.0	0.0	0.0	0.0
Health and Welfare	95.9	74.0	103.0	155.0	175.0	166.0	111.0
Law and Order/Courts	112.2	108.8	371.5	441.3	362.0	123.3	57.0
New Budget Line Items		606.4	701.7	520.3	209.3	171.4	0.0
Outstanding Bills		257.3	50.0	0.0	0.0	0.0	0.0
Shelter and Day Care				120.0	83.3	71.3	30.0
Tribal Oil and Gas Office				100.0	106.2	0.0	0.0
Commodity Program				39.0	39.0	39.0	39.0
Business Development Manager				38.0	28.4	10.0	0.0
Land Office						40.0	33.5
Home Improvement Program						40.2	29.9
C.E.T.A. Program						23.0	0.0
Per Capita Payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other and Misc	73.8	21.4	342.4	1394.0	984.0	565.0	223.1
TOTAL	935.5	2012.8	2947.8	4187.6	3361.8	2527.7	1297.8

Note: Expenditures in thousands of dollars.

Source: File Copies of Approved Northern Cheyenne Tribal Budgets, Tribal Treasurer, and Tribal Finance Officer (Feeney et al., 1986).

3.5.N Tribal Government

The Northern Cheyenne Tribal Government is organized under guidelines of the Indian Reorganization Act of 1934. Through a referendum in 1936, Tribal members adopted a constitution and corporate charter. The Tribal government has three branches: legislative, executive, and judicial, with the primary governing body being the Tribal Council. The Tribal Council consists of 17 members. Issues affecting the Tribe are presented before the Tribal Council, and policy decisions are enacted by resolution of the Council. Resolutions require a majority vote and Council meetings are open to the public. Tribal programs are generally run by Tribal committees which are appointed by the Council President with advice and consent of the Tribal Council. There are five districts (Busby, Birney, Ashland, Muddy, and Lame Deer) which deal primarily with local issues on the Reservation. (See Chapter 3, Section 3.7.N.) Each district has its own elected officials and elected Tribal council representatives. Meeting of these district groups occur on an "as needed" basis.

Tribal leadership was very stable in the period from 1970 to 1984, especially considering the rapid changes the Tribe was facing from coal development and other issues. Since 1984, there have been several changes in Tribal leadership with accompanying signs of increased factionalism within the Tribe. Some of these changes included removal of the Tribal president by the Tribal Council and disputed elections. Whether this instability will continue or whether present Tribal leadership can stabilize the situation is unknown.

In the 1970s and early 1980s, the Tribal government became structurally more complex. More departments and programs were needed in order to serve more people and implement new programs on the Reservation. During this period, Tribal budgets were increasing and the Tribe was able to offer greater services to its members. Since 1984, the budget situation has begun to deteriorate, and some programs have been reduced or abolished. This, in turn, has reduced the level of employment in Tribal government. The reduction in available funds, however, has not reduced the complexity of Tribal government. The number of resolutions handled by the Tribal Council in 1984 and 1985 averaged 334 per year, or about 100 more resolutions a year than the average between 1970 and 1978. In addition, many of the programs and departments established within the last 15 years have become important to the well-being of Tribal members. The Tribal Council, therefore, has the difficult job of allocating a declining budget among a large number of programs and departments.

In the last 15 years, the Northern Cheyenne Tribe has increased its awareness, technical knowledge, experience, and sophistication in dealing with off-Reservation development. For example, the Tribe initiated litigation to promote the interests of the Tribe with regard to regional coal development. This demonstrated a decreasing reliance by the Tribe on the federal government to protect its interests. For more information about what actions the Tribal government has taken in regard to regional development, see Feeney, et al., 1986.

3.6.N Housing/Services/Infrastructure

This section describes housing, services, and infrastructure on the Northern Cheyenne Reservation as of fall 1987. It should be noted that Tribal, BIA, and other programs that affect housing, services and infrastructure can change rapidly because of changes in funding levels, personnel, program goals, and program administration. Therefore, changes in service provision may have occurred since this document was prepared.

Housing

In December 1985 there were approximately 1,139 permanent housing units on the Northern Cheyenne Reservation. These units consisted of 641 U.S. Department of Housing and Urban Development (HUD) housing units (mostly built since 1970), 126 agency staff housing units, 345 private homes and 27 Tribal Staff homes. In 1985, a survey indicated 149 of these units were in substandard condition (Feeney, et al., 1986). In 1986 and 1987, approximately 25 additional HUD housing units were built. The only other housing units developed during this time were a few mobile homes moved onto the Reservation, usually on rural lots.

A severe shortage of rental and purchase units on the Reservation currently exists with very little turnover occurring. Native Americans seeking housing on the Reservation typically move in with family or friends when vacant housing is unavailable; crowding is a result of the housing shortage. The Northern Cheyenne Housing Authority currently has more than 200 families on its low-rent housing waiting list and 100 families on its mutual help (homes to purchase) waiting list (M. Bearcomesout, 1987). An estimated 500 additional housing units are needed on the Reservation to meet current demand (M. Bearcomesout, 1987). In the summer of 1987, funds for 80 new HUD housing units were authorized for the Northern Cheyenne Reservation. These units will be built in 1988; however, the construction of these units will only partially alleviate the housing shortage, leaving a demand of 420 units. The expenditures necessary to provide these 420 units would be $21.8 million in capital expenditures and $200,000 annually for operating expenses (in 1985 dollars). Further HUD housing development is dependent upon congressional authorization of funds. Past funding has not kept up with demand.

Non-Native American population growth has been limited in times of economic growth by the lack of housing available on the Reservation. In recent years, almost all of the housing built on the Reservation was built through the Northern Cheyenne Housing Authority with funds provided by HUD. Other housing possibilities on the Reservation consist of existing homes and the possibility of siting trailer units on fee land or on Tribal lease land. Due to the housing shortage on the Reservation, few, if any, existing homes are available for sale or rent at any given time. The siting of trailers is difficult, except in existing trailer courts, because of the land ownership pattern on the Reservation.

Evaluation of available information suggests the amount of permanent housing obtainable by non-Native Americans on the Reservation would be limited. Rental housing would be difficult to obtain because: (1) few private rental houses are available, and (2) HUD rental housing is not available to non-Native Americans. HUD housing that is fully owned, about 50 units in 1987, could be leased to non-Native Americans. There are a few cases where this occurred for short time periods. However, it is unlikely this would occur on a large scale as the homeowner would have a difficult time obtaining alternative housing. It would also be difficult for non-Native Americans to find homes to purchase because: (1) all vacant housing is substandard, and (2) there is very little turnover of available housing. The HUD homes that are fully owned could be sold to non-Native Americans. However, the purchaser may have difficulty obtaining the right to lease or purchase the land on which the house is located. If the land were to be sold, it would have to be taken out of trust. If the land were to be leased, permission would have to be obtained from the Tribal Land Committee. Although land can be taken out of trust, no such transfers have occurred since 1970. Likewise, no non-Native American received a lease for Tribal trust land during the same period. Non-Native Americans could purchase fee lands on the Reservation; however, fee lands account for only 2 percent of the Reservation land, and only 50 percent of fee lands is owned by non-Native Americans. The remainder of the Reservation is Tribal land (72 percent) or land allotted to individual Northern Cheyenne (26 percent). Both of these types of land, which include 98 percent of the Reservation total, are held in trust by the United States government.

The Northern Cheyenne Tribe has made a concerted effort to keep the Reservation in Northern Cheyenne hands. When an individual Northern Cheyenne allotment owner tries to take his land out of trust to sell to a non-Northern Cheyenne, the Tribe often makes an offer to buy the land. In addition, ownership of many of the individual allotments is held in common by several owners. For these lands to be sold, all of the owners in common would have to agree. The Tribe has purchased some of the shares of the owners of allotments, and therefore, is a part owner of many of the allotted lands. The Tribal constitution prohibits the sale by the Tribe of Northern Cheyenne lands. Therefore, much of the land on the Reservation is not available for purchase. The Tribe does provide long-term free leases to Northern Cheyenne for 2½-acre homes sites. Transfer of leases for these home sites must be approved by the Tribal Lands Committee. Much of the land on the Reservation is not available for non-Northern Cheyenne to put homes on, and much of what may be available is unsuitable for home sites.

Housing is currently (1987) available to both Native Americans and non-Native Americans at three mobile home courts in or near Lame Deer where 24 spaces are available for mobile homes and 20 spaces are available for RVs and small trailers. Eleven of the mobile home spaces and all of the spaces for RVs and small trailers are currently vacant.

Water and Sewer

Each of the five Reservation communities (Busby, Muddy Cluster, Lame Deer, Ashland Village, and Birney Village) are served by community wells and water storage systems. According to the IHS, the systems are designed to meet the needs of the current populations (Hartfield, 1987). Water quality is reported to be poor Reservationwide because of very high mineral content. This results in distasteful water and causes pipe corrosion. Obtaining adequate water pressure is periodically a problem in the higher elevations of Lame Deer.

Each Reservation community is also served by community wastewater lagoons. According to Hartfield (1987), the systems are designed to meet current population needs. However, in Ashland the sewage lagoon cells do not hold water (repairs scheduled for spring of 1986 had not been completed by fall 1987), and there are occasional operation and maintenance problems with the Busby and Birney Village systems. While some of the systems reportedly have excess capacity (Feeney, et al., 1986), the Lame Deer system is operating at a maximum level, and physical constraints on lagoon expansion exist in this community.

The IHS provides well drilling and septic tank installation free for Native Americans on scattered homesites on the Reservation. There are 290 individual water supply wells and 333 septic systems on the Reservation (Feeney, et al., 1986). In 1987, eight homes were provided with services and eight more are proposed for service (Hartfield, 1987). Non-Native American wells and disposal systems, such as those for the Burns trailer court east of Lame Deer, fall under the jurisdiction of the county health departments.

Solid Waste

The IHS has built canister sites for temporary solid waste disposal in Lame Deer, Ashland Village, Busby and Muddy. There are nine canisters located at these sites. A contractor hired by the Tribe currently (1987) hauls the Lame Deer and Ashland refuse from the canisters at these sites to the Colstrip dump. The Busby and Muddy canisters are emptied by a Billings contractor hired by Big Horn County. The site at Lame Deer reportedly needs to be rebuilt, or relocated and rebuilt, and an additional canister added. An unused canister is located in Birney Village, and there are plans to build a canister site in that community. Construction of the two sites (Lame Deer and Birney Village) would cost $30,000 (in 1985 dollars). Operating costs for the additional canisters would be $14,000 annually (1985 dollars). Difficulties with the canister sites and disposal system include structural and design problems, use problems, equipment problems, maintenance and personnel problems and high disposal costs (Feeney, et al., 1986). In addition, numerous fires, both arson and accidental, have occurred at the sites.

Education

Children living on the Northern Cheyenne Reservation have a variety of school options. Elementary students

(Grades 1-8) may attend Busby Tribal School, Lame Deer Elementary (public), Ashland Elementary (public), St. Labre Indian Catholic School, or Colstrip schools (public). Busby Tribal School, Lame Deer Elementary, and St. Labre are located on the Reservation, while the Ashland school is immediately adjacent, and Colstrip Schools are located approximately 11 miles north of the Reservation border. Of the 759 Northern Cheyenne elementary students enrolled in these schools in fall 1987, 31 percent attended Lame Deer Elementary, 13 percent attended Busby Tribal School, 21 percent attended St. Labre, 33 percent attended Colstrip elementary schools, and 3 percent attended Ashland Elementary. (The Colstrip figure has increased from the 1985-86 school year when 16 percent of the Reservation elementary students attended Colstrip schools.) All of the schools accept students from the entire Reservation. The Busby Tribal Schools, St. Labre and the Colstrip Schools provide bus service to and from each of the districts.

High School students may attend Busby Tribal School, Colstrip High (public), Hardin High (public), and St. Labre Catholic Indian School. The Busby Tribal High School had lost its accreditation and BIA funding in the early 1980s; however, the school currently (1987) is accredited, offers a full high school curriculum, and receives BIA funding. Hardin High serves students who live in the Big Horn County portion of the Reservation. All other high schools serve the entire Reservation and provide bus service to and from each Reservation district. Of the approximately 264 Northern Cheyenne High School students enrolled in these schools in fall 1987, 26 percent attended St. Labre, 50 percent attended Colstrip High School, 18 percent attended Busby Tribal School and 6 percent attended Hardin High School. (The percentage of high school students attending Colstrip High increased from 34 percent in 1985-86 to 50 percent in 1987.)

None of the public schools charge tuition to any students, and fees at the private schools are minimal. Recently there has been a trend of Reservation students transferring to Colstrip schools because Colstrip facilities and instruction are reported to be excellent, and Colstrip dropped its tuition for out-of-district students. (See above and Technical Report 3). Some of the major concerns regarding education of Reservation students include the future of a Reservation high school, high dropout rate of high school students, frequent switching between schools during the school year, long commutes (in some cases round trips of 3-4 hours daily) over roads in poor condition, and limited extra curricular involvement and low parental participation in school activities because of the long commute. Reservation residents are also concerned about a lack of involvement with and understanding of Northern Cheyenne culture and language by the off-Reservation public schools attended by many of the Northern Cheyenne students (Silvertip Consulting Associates, 1985), as well as a lack of Native American role models within these school systems. Additional concerns raised by Reservation residents are that Reservation schools deteriorate as Reservation children transfer to off-Reservation schools (because Reservation schools are largely reliant on student enrollment based funding), and that the social and cultural life of the Tribe will be affected by the increasing number of students attending off-Reservation schools. Recently, funding for the Busby Tribal School has declined.

Health Care

Native Americans have a notably higher incidence of certain infectious diseases and chronic illnesses and have a lower life expectancy than other Americans. Statistics comparing Northern Cheyenne and Crow causes of death with rates for the overall U.S. population indicate that the Northern Cheyenne and Crow had notably higher death rates from motor vehicle accidents, all other accidents, cirrhosis of the liver, suicides, homicides, perinatal morbidity and mortality, diabetes, congenital anomalies, and tuberculosis. Crow are included here because available statistics combine the two Tribes. At the same time, these groups had lower rates for heart diseases, tumors, cerebrovascular diseases, and arteriosclerosis (Hartfield, 1985). On the whole, life expectancies for the Northern Cheyenne people are much lower than those of their non-Native American neighbors (Health and Marketing West, 1986).

Health care on the Northern Cheyenne Reservation is provided to all Native Americans by the IHS. Except for urgent care and ambulance service, no medical services are currently available to non-Native Americans on the Reservation. Outpatient care (including dental care and urgent care) for Native Americans on the Reservation, and in surrounding areas such as St. Labre and Ashland, is provided by the Lame Deer Clinic, while ambulance and alcoholism services are provided by the Tribal Health Department through an IHS contract. Major medical care is provided by the IHS hospital located at Crow Agency on the Crow Reservation or at other regional medical facilities. Care at these latter facilities is paid for by Contract Health Services (CHS) funds. A variety of other types of health care services such as home dialysis, community nursing, mental health, and health education are available on the Reservation.

The Lame Deer Clinic currently has a staff of four doctors, one dentist, and seven nurses. Although services at the clinic are reported to be good, one additional doctor, three nurses, and one dentist are needed. (Health and Marketing West, 1986; Means, 1987). Urgent care services are reported to be excellent (Means, 1987). There is a nurse on duty and a doctor on call 24 hours a day. The clinic treated approximately 100 motor vehicle accident victims in FY 1986 (Hartfield, 1987). More than 95 of these victims were Native Americans. The biggest health care problem right now is a severe shortage of CHS funds. These funds are used for treatment not available on the Reservation. This funding shortage sometimes results in delaying needed medical care until an emergency situation develops rather than preventing the problem at the outset.

The Tribally operated ambulance service is licensed by the state and has three ambulances and a staff of nine people. The ambulances, which are all located in Lame Deer, serve the entire Reservation. (Distances to outlying areas, such as Birney Village, are a limiting factor with the service.) Ambulance service (number of ambulances and staff) have

been reported to be adequate (Health and Marketing West, 1986; Means, 1987). However, in October 1987, the ambulance staff was reduced from 13 to 9 people, reducing the number of shifts from 5 to 3 (La Rance, 1987). Regional standards indicate that seven staff per ambulance is appropriate. Thus, this staff reduction will probably create problems. Ashland Village has a quick response unit located in the Village. This unit stabilizes but does not transport patients. The police are trained in first aid and cardiopulmonary resuscitation and, in outlying communities like Birney Village, are often the first responder to an emergency.

The alcoholism and drug treatment program on the Northern Cheyenne Reservation is in the process of being restructured. Detoxification and inpatient services are being phased out, and outpatient services, including family programs and services for adolescents, are being emphasized. People in need of long-term treatment are sent to a variety of treatment centers; however, there is a long waiting period for most treatment centers which tends to deter follow-through. There is a need on the Reservation to open the recently closed halfway house to serve adolescents who are returning from treatment (Means, 1987) and to hire three counselors for community education for adolescents (C. Bearcomesout, 1987). According to Charles Bearcomesout, Director of the Alcoholism Treatment Program (1987), there is increasing awareness on the Reservation regarding alcoholism and drug problems.

Total additional annual expenditures needed to provide adequate health service for the 1987 population would be $289,000 (1985 dollars).

Law Enforcement

Law enforcement services on the Northern Cheyenne Reservation are provided by five entities: the Tribe, BIA, and federal, state, and county law enforcement agencies. Tribal services include the Tribal prosecutor and Tribal Courts. The BIA provides the BIA Law Enforcement Services, formerly the Tribal Police. Federal law enforcement agencies providing services to the Reservation include the Federal Bureau of Investigation (FBI), U.S. Marshall, U.S. Attorney, and the federal courts. State services are provided by the Montana Highway Patrol, and county services are provided by the Sheriffs' offices and county prosecutors.

The BIA Law Enforcement Services (herein known as the BIA Police) have the primary responsibility for maintaining law and order on the Reservation. They provide the initial response to any call or report concerning criminal activity on the Reservation. Police facilities include a department office in Lame Deer and a jail which has just undergone a major renovation at a cost of more than $1 million. Until June 1987, the Tribe operated the police force under a contract with BIA. At that time, the Tribe cancelled the contract, and the police force is now part of BIA.

The BIA police are trained at the BIA Indian Police Academy. The police staff (not including support staff) has varied from 8 in 1971, to 18 in 1984, to 10 in 1987. The recent staff decrease results partly from reductions in funds available from federal and Tribal sources. Also, law enforcement funding available through the Montana Power Agreement ($50,000 a year for 5 years beginning in 1980) has been terminated.

Patrol coverage in outlying areas is limited. For instance, Busby is patrolled for only 8 hours a day, and the nearest backup for a call in Birney Village is likely to be 20 miles away. Currently, equipment includes three fully equipped patrol cars, two utility vehicles, and two unmarked investigators' cars.

The old jail, which has recently been renovated, housed 26 inmates. The new jail has a planned bed capacity of 18 inmates plus a large detoxification cell. The average daily inmate population in 1983 was reported by the BIA as nine inmates. A 13-week sample in 1984 showed an average daily population of 18.6 inmates (Mountain International, 1986). The jail houses people being detained on a pretrial basis as well as those serving sentences.

Jurisdictional issues on the Reservation are complex and generally depend on the type of crime committed. For example, there is no Tribal criminal jurisdiction over non-Native Americans. However, if a warrant has been issued, non-Native Americans may be detained until pick-up by county or state officials, depending upon the offense. While the scope of Tribal civil jurisdiction is broader, it is still not fully defined. These jurisdictional issues are the subject of a growing body of case law.

Alcohol is prohibited on the Northern Cheyenne Reservation. Alcohol possession and intoxication account for over 75 percent of all police arrests, and alcohol-related offenses account for over 86 percent of all arrests (Mountain International, 1986). Alcohol-related offenses have consistently comprised a high proportion of crimes committed on the Reservation during the past 15 years (Feeney, et al., 1986).

Noncriminal activity such as responding to accidents or requests for assistance, peacekeeping, serving civil papers, etc., actually occupies the bulk of a police officer's time. In 1984, for example, the police made 2,596 arrests for misdemeanor criminal activity and traffic offenses. However, the department responded to 11,673 "nonenforcement" (i.e., noncriminal activity) calls. In total, 14,208 incidents of all types were reported to the police which, in turn, led to 2,719 arrests.

Hard data on crimes by type, incidence and disposition, and arrests by residential status are not available from police records for recent periods. However, interviews with staff indicated that police contacts with non-Native Americans were highest during the high employment periods, especially during the construction of Colstrip Units 1 and 2, and have decreased since then.

The Tribal police department was reported to suffer from poor morale and a high rate of employee turnover as well as a low level of professional training (Mountain International, 1986). This may be changing with the new administration of the police force. According to Bob Welsh, Chief Criminal Investigator (1986), BIA, the BIA police need an

additional six officers to meet current Reservation needs and give adequate coverage to outlying areas. Hiring six additional officers would require a capital expense of $104,000 and an annual operating expense of $132,000. Both figures are in 1985 dollars.

The Tribal Court is guaranteed by the Tribe's Constitution. It is funded by BIA, fines collected by the court and the Tribe when money is available. The Tribal Court's jurisdiction is limited to adjudication involving Northern Cheyenne Tribal code, misdemeanor criminal actions, and civil cases. Most civil cases involve trespassing, grazing infringement, damages, property settlements, restraining orders, and legal separations and dissolutions. Criminal cases include burglary, forgery, and embezzlement (Feeney, et al., 1986). Non-Native Americans may bring suit in Tribal Court. In 1982, there were an estimated 320 civil cases; between 12 percent and 15 percent were actions by non-Native Americans initiated against Native Americans arising from commercial transactions off the Reservation (Feeney, et al., 1986). The Tribal Court is not a court of the State of Montana.

Most cases tried in the Tribal Courts result from arrests made by the BIA police. Arrests are reported to average over 2,500 per year. Recent Tribal funding cutbacks have drastically reduced the court staff (Feeney, et al., 1986). Some problems with the court system include long periods between criminal arraignments and trial (which may be unnecessary in a court system that fundamentally handles misdemeanors); insufficient recordkeeping systems; and charges that the Tribal Court and prosecutorial functions appear to be the constant target of personal and political influence aimed at winning charge dismissals or sentence reductions for various individuals who entered the criminal justice system (Mountain International, 1986).

Major crimes are referred to the U.S. Attorney for prosecution. Federal involvement is generally triggered by 1 of 16 major federal crimes (as defined by the Major Crimes Act) or the involvement of non-Native Americans. The major crimes involve murder, arson, rape, assault with a dangerous weapon, burglary, and various other felonies. The U.S. Attorney's Office currently handles major cases, but will not prosecute lesser offenses involving Native Americans and non-Native Americans. Where jurisdiction exists, lesser offenses are usually handled in Tribal Court, although the court's caseload is so large that minor crimes may not be heard for months. Currently, there is one BIA Special Officer/Criminal Investigator on the Reservation. FBI and U.S. Marshall support is available in Billings. In practice, the BIA police are generally involved in the initial detention of suspects. Criminal investigation records are kept in Lame Deer for only 3 years, so data on the court system and its caseload are limited. Between 1984 and 1985, there was a 50 percent drop in felonies (from 69 to 33). Reasons for the decrease are unknown (Feeney, et al., 1986).

In cases involving crimes of non-Native Americans against Native Americans on the Reservation, BIA police are required to call in county or state officials. Until 1983, these cases were prosecuted in State Court. A Montana Supreme Court decision in 1983 (*Montana* v. *Greenwalt*) held, however, that the State has no jurisdiction to prosecute non-Native Americans for crimes against Native Americans that occur on a Reservation. Because the Tribal Court does not have criminal jurisdiction over non-Native Americans, prosecution must occur in Federal Court. However, the Federal Court is reluctant to prosecute misdemeanors and minor offenses (Feeney, et al., 1986). Officers from the County Sheriffs' Departments and the State Highway Patrol do not patrol within the Reservation, with the exception of Lame Deer and the two state highways within the Reservation, where they have jurisdiction only over non-Native Americans. For practical reasons, the BIA police have primary law and order responsibilities on the Reservation. In the past, the police have also responded to calls involving Native Americans in areas adjacent to the Reservation such as Ashland and Jimtown. One police officer is currently cross-deputized with Rosebud County.

A new law and order code was adopted by the Tribal Council in July 1987. Controversy existed over some provisions of the code, and a Reservationwide referendum was held; the new code was upheld. Provisions in the code include the creation of a three-member appeals court panel, and substantial changes to the traffic code (see "Roads" under this section). In addition, the maximum penalty that can be imposed by the Tribal Court was increased to 1 year and a $1,000 fine.

Fire Protection

Forest fire protection for the Reservation is handled by the BIA Forestry Program in Lame Deer. Area federal agencies, including the BIA, the BLM, Forest Service, and National Park Service, have cooperative agreements for fire control assistance. These are handled by the Interagency Dispatch Center in Billings. Seasonal fire crews, numbering 8 to 20, are hired for the fire season (June 10 through October 10). The crews are trained and generally experienced firefighters. Eight vehicles are available for forest fire control: two 300-gallon pumpers, one 1000-gallon tanker, two TD8 Cats, one lowboy, one stake truck, and two pickups with 100-gallon slip-on units. The equipment has been maintained and replaced as needed, with approximately the same number of vehicles being available over the past 15 years (Feeney, et al., 1986). A review of fire records for the period 1970-1985 indicates large fluctuations in the number of forest fires, ranging from 3 in 1978 to 133 in 1983. It is not known whether this variation results from uneven reporting procedures. Lightning accounted for 20 percent of the fires in years in which data was available. Forestry personnel believe there has been an increase in human-caused fires in recent years. One particular problem is the waste disposal canister dumpsites.

No records are available on the incidence or cause of structural fires. However, a number of fatalities in the years 1980, 1981 and 1983 resulted from house fires. Structural damage from fires is often extensive. Houses in the HUD program are insured for full structural replacement, but not for household goods. Few other Reservation residents have complete fire insurance protection.

Structural firefighting equipment on the Reservation is owned by BIA and is located in Lame Deer and Busby to protect BIA buildings. Fire equipment consists of one 1000-gallon tank truck in Lame Deer, and a 300-gallon pumper in Busby. No organized or trained volunteer group is set up to fight structural fires. Fires are fought by BIA employees on a volunteer basis. These volunteers have had limited structural firefighting training. The BIA Police Department dispatcher handles calls and notifies volunteer drivers. Response times are variable and can be lengthy. For instance, travel time from Lame Deer to Birney is 20 minutes, and from Lame Deer to Muddy District is about 10 minutes in good weather. Other response problems include a lack of equipment readiness and trained volunteers (Feeney, et al., 1986). Fire trucks from both Lame Deer and Busby have been used for vehicle fires on U.S. Highway 212. Large chemical or fuel oil spills, including one in 1984, are handled by the County and/or State Highway Department.

For adequate structural fire protection, an organized structural fire protection service and a fire engine and building are necessary. The truck and building would require a capital outlay of $175,000 (1985 dollars). It is assumed the fire engine would be staffed by trained volunteers.

Equipment for the Ashland area was purchased by St. Labre Mission and is operated by volunteers. They have one tank truck and two transport vehicles. These volunteers will respond to fires in the Ashland Village area.

Roads

Roads on the Northern Cheyenne Reservation are under the jurisdiction of the State of Montana, Rosebud and Big Horn Counties, the Tribe and BIA (see Figure 3-1). Many of the Reservation roads are currently in poor condition. The condition of these roads is of particular concern because the roads receive so much school bus traffic. U.S. Highway 212 is the east/west route across the Reservation and is the major local as well as commercial transportation route. This highway, and MT 39, are under state jurisdiction. Traffic volume on U.S. 212 averages approximately 1,500 vehicles a day (based on 1984, 1985, and 1986 data, MT Department of Highways, 1988). Detailed information on motor vehicle accidents is not available. State highway data underestimates accidents because accidents handled by the BIA police are often not reported to the state (Feeney, et al., 1986). However, fatality rates on this highway are much higher than on off-Reservation roads. Between 1979 and 1985, the fatality rate between Busby and Lame Deer was 9.6 per 100 million miles versus a state average of 4.5 and a national average of 2.9 per 100 million miles (Feeney, et al., 1986). The Lame Deer-to-Ashland portion of U.S. 212 has a very low sufficiency rating based on a combination of road condition, capacity, safety and other rating characteristics (Feeney, et al., 1986). The portion from the western border to Busby also has a low sufficiency rating. Reportedly, U.S. 212, as well as MT 39, received a noticeable increase in truck traffic in the past decade. There is a great deal of concern on the Reservation regarding the MT 39/U.S. 212 intersection at Lame Deer. The intersection is particularly hazardous during winter when roads are icy.

The MT 39 goes north from Lame Deer to the Reservation border and ultimately to Colstrip and beyond. This road averages about 1,100 vehicles a day (based on 1984, 1985, and 1986 data). It currently has a low sufficiency rating in contrast to the same highway north of the Reservation border that was recently resurfaced (Feeney, et al., 1986). One secondary road, the Kirby road, is under the jurisdiction of Big Horn County. This road averages about 200 vehicles a day (based on 1984, 1985, and 1986 data). Two other secondary roads, Birney Village to Lame Deer, and Birney Village to Ashland Village, are under the jurisdiction of and maintained by the Tribe and BIA. The BIA estimates for 1979 indicate traffic between Ashland Village and Birney Village at 200 vehicles a day. Traffic on the road between Lame Deer and Birney Village averaged 215 vehicles a day (1986 and 1987 average). The Lame Deer to Birney Village road needs to be resurfaced; this is a priority and will be scheduled when time and money are available.

There are numerous problems with law enforcement on Reservation roads. These include: The Highway Patrol has no jurisdiction over Native Americans; BIA Police have limited jurisdiction over non-Native Americans; until recently (1987) there were few traffic regulations; and the police generally lack the work force and equipment to enforce regulations (Feeney, et al., 1986). Accidents on state highways and driver arrests and fines are generally underreported on the Reservation, again because of the lack of Highway Patrol jurisdiction over Native Americans. A new Tribal Code, which substantially revises the traffic code on Reservation roads, was adopted in July 1987. License plates, drivers licenses, and insurance are now required of drivers/vehicles on Reservation roads. In addition, the Tribal Court now has the authority to suspend or cancel the license or driving privileges of any person convicted of driving under the influence of alcohol, reckless driving or vehicular homicide. These changes in the traffic code may help to alleviate some of the problems.

Recreation

Dispersed outdoor recreation activities available on the Reservation include hunting, fishing, hiking, horseback riding, and plant and berry gathering. Unrestricted year-round hunting is allowed on the Reservation for enrolled Tribal members. Hunting by nonmembers is not permitted at any time. Very little information is available on Reservation hunting. Wildlife surveys conducted annually since the late 1970s indicate a steady decrease in game on the Reservation. Despite the limited game on the Reservation, there are reports of hunting by nonmembers and non-Native Americans, perhaps in increasing numbers. Enforcement of Tribal hunting and fishing policy is the role of the Tribal compliance officer. These compliance officers are hired by the Tribe to monitor recreation areas. The number of officers fluctuates with the Tribal budget. Five to seven compliance officers are needed to adequately cover the Reservation (Welch, 1987). Seven compliance officers would require a capital expenditure of $115,000 and

$154,000 a year in operating costs in 1985 dollars. Currently, there are no compliance officers.

Fishing opportunities on the Reservation are limited and generally restricted to a few ponds that are stocked sporadically. Members do not need fishing permits, nor are there regulations as to catch number or size. From the late 1970s through 1981, the Tribe issued fishing permits to nonmembers; since 1981, no permits have been issued, primarily because there has been limited pond stocking and limited fishing.

Other types of dispersed recreation activities on the Reservation are generally unregulated. Most participants are Reservation residents, including Tribal members, other Native Americans, and non-Native Americans. The Tribe has no set policy for nonmember recreational use. However, it does have the option of stopping nonmembers from trespassing. Because of the unique culture of the Northern Cheyenne, conflicts between Native Americans and the non-Native American collectors of plants, berries, fossils, or artifacts can occur. This happens because plants, berries, fossils, or artifacts can have unique cultural significance in addition to economic worth for the Northern Cheyenne.

Developed recreation areas on the Reservation include Crazy Head Springs and Lost Leg Lake (fishing, picnicking, and camping); Green Leaf, Red Nose, Parker, and LaFevre ponds (fishing); and Morning Star Lookout (scenic overlook). Facilities are minimal at these sites. The sites were developed and are maintained by the BIA on Tribal lands, except LaFevre pond near Busby, which is private. Undeveloped sites include Badger Peak and Buffalo Jump. Reservation residents are the main area users. Crazy Head Springs is located 7 miles east of Lame Deer. Its well maintained entrance road is marked by a sign that does not limit use to Tribal members.

Limited recreation facilities, primarily baseball diamonds and a community center, exist in each of the Reservation's communities. Most of the Reservation's recreation facilities are located in Lame Deer. The Tribally owned and operated recreation facilities in Lame Deer include the Tribal gymnasium (basketball, powwows, traditional games), the Cheyenne social club, (bingo, video poker, video games), a swimming pool, two baseball diamonds, and a handgame building (where traditional team gambling games are played). Several people who were interviewed in 1987 indicated the need for recreation facilities for youth and a meeting place for the elderly in Ashland Village.

Social Services

The social services available to Northern Cheyenne Tribal members are comparable to those available to other U.S. citizens and Montana residents. These social services include general assistance, child protective services, commodities, Medicaid, food stamps, etc. On the Reservation, the trend has been for the Tribe to administer programs formerly administered by the federal, state, or county governments. Some programs on the Reservation are still administered by county and state agencies. This results in an apparently complex and deceptively large number of social service programs on the Reservation. See Feeney, et al., 1986, for a comprehensive discussion of the social services available on the Reservation.

The Northern Cheyenne Social Services Office is the largest social services agency on the Reservation in the number of clients served, its budget, and the number of assistance programs offered. This program is responsible for general assistance programs, child welfare programs, which include battered spouses and child abuse cases, Tribal charity programs, and overseeing a temporary children's shelter. These programs are funded through BIA and the Tribe. The current staff of one director, two social workers, and a secretary is inadequate to address problems; the social workers generally have time only to deal with crisis situations. Six additional social workers are needed to adequately deal with current caseloads (Tallbull, 1987). These social workers would require an annual expenditure of $132,000 for operating expenditures and a capital expenditure of $66,000. Both figures are in 1985 dollars.

The Rosebud County Welfare Office has a branch office in Lame Deer which administers the Food Stamp Program, Aid for Families with Dependent Children (AFDC) and determines Medicaid eligibility. Many Northern Cheyenne households do not qualify for AFDC. However, almost 75 percent of the county's food stamp clients are Native Americans, most of whom live on the Reservation. The staff at the Lame Deer office has declined in recent years. Presently the staff consists of one secretary and two eligibility technicians.

Other Services

Dull Knife Memorial College was chartered by the Tribal Council in 1975 to provide vocational training for jobs in mining enterprises in communities near the Reservation. To meet local needs, academic courses were added in 1978. The school now provides an Associate of Arts degree in academic disciplines, an Associate of Applied Sciences in vocational areas, and vocational certificates in various skill areas (Feeney, et al., 1986).

In the fall of 1987, there were 125 full and part-time students, with a full-time equivalent (FTE) of 100 students. About 10 percent of the 1987 students were non-Native Americans. That figure has been as high as 20 percent in the past. Many of the non-Native American students are from the Colstrip and Ashland areas. The college employed 14 full-time and 24 part-time faculty members in the fall of 1987.

Most of the schools programs are federally funded under the Indian Higher Education Act. Payments are based on FTE Native American students. These payments have declined substantially in the past few years. The college receives no state funds from the Montana Board of Higher Education, even for non-Native American students, because it is not a state institution. (Other Montana community colleges which are state institutions receive $3,400 per FTE from state funds.) Therefore, funding does not increase when non-Native Americans students attend the

school; tuition and fees cover only a very small proportion of the costs of an additional student. The school has plans to apply to the State Legislature in 1990 to receive state funding for non-Native American students (McDonald, 1987). This would require an amendment to the Montana Higher Education Act.

3.7.N Social Organization

Community social organization refers to the structure and processes that organize how people in a community relate to one another. *The Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity; outside ties; distribution of resources/power; coordination and cooperation among people in the community; and patterns of personal interaction. They are included in the following discussion. See Feeney, et al., 1986, for a more indepth discussion of Northern Cheyenne Reservation social organization.

Social researchers consistently report that Northern Cheyenne Tribal members have a strong sense of Tribal identity (Feeney, et al., 1986). This sense of Tribal identity is derived from a shared common language, culture, history, political and social organization, and some behavioral values. It is reinforced through the Tribal enrollment process, which entitles recognized Tribal members to receive certain privileges and services. The physical delineation and relative isolation of the Reservation has also been an important factor in Northern Cheyenne identity. A definite difference is perceived between "on-Reservation" and "off-Reservation" settings. However, the sense of isolation that Reservation residents experienced earlier in this century has continually decreased as a result of such actions as road paving and the coming of television in the 1950s and, more recently, increased interaction with non-Northern Cheyenne both on and off the Reservation. In addition, the frequency of social interactions has increased because of increasing Reservation and regional population.

During the past 15 years, the increasing mobility of Tribal members has increased their interactions with non-Native Americans. Northern Cheyenne leave the Reservation for short recreation and shopping trips, and for extended periods primarily for military service, education, and jobs. Regional coal development has resulted in more Northern Cheyenne traveling on a daily basis to Colstrip. Not only do adults go there for jobs, but pupils are bussed there daily to attend school where they have much more contact and interaction with non-Native Americans than has been typical in the past.

In 1985, non-Native Americans accounted for about 13 percent of the Reservation population. Some non-Native Americans are married to Native Americans who live on the Reservation. In general, however, interactions between non-Native Americans and Northern Cheyenne on the Reservation tend to be more formal than those among Native Americans, partly because of mutual prejudice and animosity, and partly because many non-Native Americans occupy definite roles as business owners, clergy, teachers, health professionals, or agency officials, and therefore, are in positions of authority.

Non-Northern Cheyenne Native Americans now account for approximately 15 percent of the Reservation population. Many of these Native Americans from other Tribes are married to or related to Northern Cheyenne. They are generally accepted into the Reservation community, and may even be awarded jobs in the Tribal government or roles in important traditional ceremonies. They are not, however, considered the same as Northern Cheyenne.

In spite of the increased presence of non-Northern Cheyenne, the Reservation is still a place where Northern Cheyenne are definitely the majority. There is nowhere else in the country where this is the case. The intimate scale of personal interactions possible among Northern Cheyenne on the Reservation is highly valued.

Kinship continues to be central in defining Northern Cheyenne social relationships. To some extent, members of extended families still choose to reside near each other, although most Northern Cheyenne now have some relatives in every part of the Reservation as a result of large family sizes, marriages, and voluntary relocations. Feeney, et al., (1986) suggested that younger people are becoming more used to the concept, predominant in White society, that they should be responsible for supporting primarily their nuclear family (i.e., mother, father, and children) rather than their extended family (i.e., mother, father, children, and other close relatives such as aunts, uncles, grandparents). Nuclear family residence has become much more common since the construction of numerous new homes on the Reservation during the 1970s. Nonetheless, households composed of extended family members are not uncommon, and many Northern Cheyenne still express ambivalence and conflict about the move toward nuclear family living arrangements. Furthermore, individuals tend to maintain ties with extended family members, if they are not actually living with them, by visiting them on an almost daily basis.

In fieldwork conducted in 1967-68, Weist (1970) described the Northern Cheyenne social system as loosely structured, with flexible group membership in a wide variety of formal and informal groups, as well as a wide range of lifestyles and life histories among Northern Cheyenne. A great mix of behaviors and values was evident in such areas as participation in traditional ceremonies, child-rearing practices, religious affiliations, and use of medicines; there was a noticeable tolerance for experimentation.

Social diversity and complexity has continued to increase over the past 15 years, largely as a result of increased interactions with members of other cultures both on and off the Reservation, as well as exposure to new values and lifestyles through television and movies. Those who live away from the Reservation for extended periods often learn

new value orientations and lifestyle preferences. When these members return to visit or live, these new values are brought back and adapted to life on the Reservation. In the past, failure to conform to rigid expectations resulted in social pressure or, in extreme cases, ostracism. Now families rely more on the court system and social workers to effect behavior changes (Feeney, et al., 1986), and otherwise continue to tolerate diversity within the Tribal community. While the Reservation has continued to provide a sense of protectiveness and relative isolation, many Feeney interviews indicated that "whatever happens outside comes through here eventually."

Tribal members today may affiliate with any of a large number of interest groups, or participate in any of a large number of voluntary associations, religious groups, or activities. Membership in these groups is fluid depending upon the particular situation, and is predominantly Northern Cheyenne. Because of the increasing heterogeneity in the Northern Cheyenne community, there are numerous distinct subgroups within the Reservation population. Subgroupings that were most frequently mentioned during Feeney's field research conducted in January 1986 include: the full-bloods versus the mixed-bloods; the employed versus the unemployed; and the traditionalists versus the progressives. Feeney says, "The 'versus' is used in these descriptions to reflect the sense of factionalism that was evident where these groups were discussed during informal interviews."

Much of the sense of conflict among social groups on the Reservation results from a perceived inequality of access to resources. With a Tribal unemployment rate exceeding 50 percent, jobs are the main resource to which access seems restricted. The poor distribution of resources is not a new situation on the Reservation. Weist reported in 1970 that "the goods and services which the Tribe has at its disposal are not dispensed equally." However, while resources may not have been shared evenly among Tribal families prior to 1970, the tradition of sharing resources within the extended family was stronger at that time. What one family member earned or produced benefited all family members. This economic cooperation within the extended family still exists among the Northern Cheyenne, but to a lesser extent, and it is practiced less consistently (Feeney, et al., 1986).

Regional coal development has accelerated the process of social diversification among the Northern Cheyenne, mainly by providing avenues for more contact between Tribal members and non-Native Americans. Coal and power company scholarships and training programs, access to a new range of industrial jobs, and the voluntary bussing of pupils to Colstrip schools, have increased opportunities for interactions with non-Native Americans. These have been important new factors in exposing Northern Cheyenne children and young adults to the values and behaviors of White society. Although this increased interaction does not seem to have deteriorated the sense of "Cheyenneness" among the workers, parents report mixed feelings about the effect on their children. Some parents feel the exposure to non-Native American children in Colstrip has made their children more aware and proud of their unique Cheyenne culture, which they had previously taken for granted. Others have expressed concern that the young who were exposed to White values became confused and disoriented (Feeney, et al., 1986). The traditional values that many Cheyenne still uphold, and that they feel are most in conflict with White values, include a deep respect or reverence for the land, a strong emphasis on kinship bonds, and an emphasis on group welfare.

Another important factor to consider is that coal-related employment has benefited some individual Northern Cheyenne very much, but has not benefited the majority of Tribal members. This has resulted in accentuating the gap between the "haves" and the "have-nots" on the Reservation. The types of jobs that have become available because of regional coal development are significantly different from those that have typically been available on the Reservation. In comparison to most jobs available on the Reservation, which are part-time, seasonal, temporary, and relatively low-paying, coal mining and utilities offer employment with high wages and job security, particularly the operation-phase jobs. Even jobs that have been available through the Tribal government tend to be short-term because of the Tribe's dependency on grant cycles and program-specific funding.

Most nuclear families on the Reservation have not benefited from what is clearly perceived to be a major benefit of regional coal development jobs. Those Northern Cheyenne who do successfully hold down coal sector jobs are seen by other Tribal members as very well-to-do. This combined with other social changes that have taken place over the last 15 years, such as the growth of single family households and some deterioration in the practice of extended family economic cooperation, has resulted in the perception that resources in general, and the benefits of coal development in particular, are not equally accessible to all Tribal members. The adverse effects of coal development, however, such as increased traffic, increased presence of non-Native American transients on the Reservation and non-Native American inhabitants off the Reservation, increased demand for Tribal facilities and services due to inmigration, and increased culture change pressure, are seen as burdens borne by all Northern Cheyenne.

Diversity Among Reservation Communities

The Northern Cheyenne Reservation is divided into five districts (see Map 3-2) which have both political and social relevance. In the early days of Reservation settlement, distinct Cheyenne bands chose different parts of the Reservation on which to settle. As the population became more centralized over time, the present communities or residential areas of Busby, Birney Village, Lame Deer, Ashland Village, and Muddy were formed. Today, it is generally acknowledged that each of the five districts has developed a distinctive character that distinguishes it from the others.

Busby District, which is divided into Busby proper and Kirby (a residential area south of Busby), is noted for its

community cohesiveness and the active involvement of residents in community events. It has strong church groups and an active alcohol and drug abuse program sponsored by the churches and supported by the school.

Lame Deer District is generally considered to include residents of Lame Deer proper, as well as residents who live along the forks of Lame Deer Creek. Lame Deer is the largest Reservation community and is considered the most cosmopolitan because of the greater diversity of social groups there. In many ways, Lame Deer functions as a capital because of the centralization there of Tribal and other services over the past decade, as well as the construction in Lame Deer of major Tribal facilities, such as the Social Center, the Tribal Gym and the Community Center. Lame Deer is the commercial center of the Reservation and is at the center of a network of roads which branch out to Hardin, Colstrip, Ashland, and Sheridan.

Ashland District is located at the eastern edge of the Reservation across the river from the town of Ashland and St. Labre Mission. A report prepared by the Northern Cheyenne Planning Office (NCPO) in 1981 noted that Ashland Village was a traditional community, where the Cheyenne language was spoken in 88 percent of homes, and spoken exclusively in the majority of homes. Several interviewees indicated there is very little social interaction between the Native Americans and non-Native Americans in the Ashland area. According to Mountain West Research — North (1982), who made a detailed study of the community of Ashland in the early 1980s,

> "There was a good deal of racial antagonism between the whites and Indians in Ashland related to stereotyping and resentment concerning resource allocation."

Some feel that easy access to liquor in Ashland causes a higher incidence of some social problems in this district (Feeney, et al., 1986). There are no commercial services in Ashland Village. The only public buildings are the community center and the Headstart Center.

Birney District is viewed as the most isolated and most traditional community. Its services, such as police protection, are limited, and there are few telephones and cars in town. Birney Village is a stable community, with a high proportion of elderly people and many extended family households (NCPO, 1981). The Sacred Hat Lodge has traditionally been kept in Birney Village. The peace and quiet of the Birney area are very important to the people who live there. There is no commercial development in Birney Village. The only public buildings are the community center and a church.

Muddy District includes the areas called Muddy, Rosebud, and Muddy Cluster. This district has the most diffuse population distribution, with no real town center. The former sense of a closed community has changed recently as a result of new HUD housing construction, which has attracted former Lame Deer residents, as well as others who occupy the new rental units in Muddy Cluster. The latter group tends to turn over more frequently than those living in purchase homes in the district.

Capacity of Communities to Absorb Change

The *Draft Environmental Impact Statement for Round II Coal Lease Sale in the Powder River Region*, (BLM, 1984), summarizes 12 factors that influence the ability of a community to respond to growth and change. Observations are made about each community in the Powder River Region. This discussion concludes that the Northern Cheyenne Reservation has limited capacity to absorb change. Ashland and Broadus are also considered to have limited capacity to absorb change, while Colstrip has a moderate and Sheridan a high capacity to absorb change. The potential for widespread disruption as a result of mine development is highest for communities with limited capacities to absorb change.

3.8.N Social Well-Being

This section includes discussions of both objective and subjective measures of social well-being. Obtaining information on social and economic trends for the Northern Cheyenne people or Reservation is difficult because information that is usually readily available for states, counties, and cities is not available for Reservations. Thus, these discussions are limited by data shortcomings.

Objective Indicators of Social Well-Being

The Native American unemployment rate on the Northern Cheyenne Reservation was in excess of 50 percent in 1985. This is much higher than for the county, state, and nation, and even higher than the Northern Cheyenne 1970 (prior to regional coal development) rate of 30 percent. Census data available for 1969 and 1979 indicate that during that decade, median family income on the Northern Cheyenne Reservation rose from $5,278 to $9,699. Adjusting for inflation, however, this represents a 7 percent decrease in income. During these same years, Rosebud County median family income rose from $6,717 to $19,792, Big Horn County median family income rose from $7,310 to $15,729, and Crow Tribe median family income rose from $5,457 to $12,239 (real increases of 49 percent, 9 percent, and 13 percent, respectively). This indicates that Northern Cheyenne families not only had less spending power in 1979 than they did in 1969, but that their economic status relative to their immediate neighbors, both Native American and non-Native American, worsened.

Data provided by the Tribal Social Services indicates that the quarterly average number of Northern Cheyenne collecting general assistance remained relatively constant from 1980 through 1983, ranging between 220 and 340. In 1984, this number jumped to 702, and in the first quarter of 1985 it jumped again, to 1,166. According to the program director, many of the Northern Cheyenne men who were employed during construction of Colstrip 3 and 4 collected unemployment after they were laid off. They subsequently applied for general assistance after their unemployment benefits ran out, and they had not found new jobs (Feeney, et al., 1986).

Record keeping for incidents of particular social problems on the Reservation is poor. In addition, social service workers are reluctant to discuss problems that are considered highly confidential (Feeney, et al., 1986). The IHS statistics for reported battered children injuries have been kept only since 1983. In 1983, 11 such cases were reported and in 1984, 18 cases were reported (Health and Marketing West, 1986). Many incidents of child neglect or abuse do not come to the attention of IHS personnel, and shortage of Tribal social services staff does not permit preventative intervention, even in known high-risk situations (Feeney, et al., 1986). The Tribal Social Services Department is concerned about child abuse and neglect on the Reeservation, and is developing plans to offer parenting classes to help address these problems (C. Small, 1987).

Complete statistics for crime rates on the Northern Cheyenne Reservation are not available; the following information may underestimate actual rates. Information on Reservation crime rates for the years 1984 and 1985 indicate that violent crimes against persons were higher on the Northern Cheyenne Reservation than for the state, while the crimes against property were lower than for the state as a whole (Montana Board of Crime Control, 1985 and 1986; BIA, 1985 and 1986).

Alcoholism has consistently been named by Tribal members as the most serious health and social problem on the Reservation. Alcoholism has been a serious problem for decades, but most Northern Cheyenne feel it has grown steadily worse. Some have estimated that 95 to 100 percent of Northern Cheyenne Tribal members either is alcoholic or is affected by alcoholism through relationships to others who are alcoholics (Health and Marketing West, 1986). Alcoholism and drug abuse are becoming a problem in younger people. Within the past several years, several cases of cirrhosis of the liver have been reported in Northern Cheyenne in their early twenties (Feeney, et al., 1986). The rates of deaths associated with alcohol abuse are many times higher for Northern Cheyenne than for the nation as a whole. The rate of deaths caused by cirrhosis of the liver between 1981 and 1983 was six times higher for Northern Cheyenne than for the U.S. population (Health and Marketing West, 1986). Deaths caused by motor vehicle and other accidents, homicides, and suicides were around three to four times as high as the national average rates from 1981 to 1983, and many of these deaths were alcohol or drug related (Health and Marketing West, 1986).

Lack of adequate housing continues to be a serious problem on the Reservation. The 1987 housing shortfall is approximately 500 units (M. Bearcomesout, 1987). Census data indicate that the median number of persons per household on the Northern Cheyenne Reservation dropped between 1970 and 1980. This change reflects the aggressive house construction activity that occurred during the decade and the consequent splitting up of extended family households into nuclear family households. While most non-Native Americans assume this would be an improvement in living conditions, many Northern Cheyenne expressed ambivalent feelings about it, both because of the breakup of extended family support groups and the added stress of regular monthly mortgage and utility bills on nuclear families.

Sacred ceremonies, such as the Sun Dance, had all but died out by the late 1960s. In 1972, the Sun Dance was held again for the first time in many years. It has been held at least once a year, and sometimes twice, every year since. Other ceremonies such as the "Piercing Ceremony" have also been revived. The traditional military societies, which were inactive for several decades prior to the 1970s, are being revived by Tribal men concerned with preserving and adapting traditional cultural knowledge.

Subjective Indicators of Social Well-Being

Data gathered through the 1975 Northern Cheyenne Household Survey indicate that the greatest community social problems, as perceived by Tribal members at that time, were: (1) alcohol and drug abuse, (2) inadequate community services, (3) unemployment and poverty, (4) crime, (5) lack of communication among people, (6) family problems, and (7) other problems such as demoralization and prejudice. Over 90 percent of all persons interviewed referred to alcoholism as a serious problem, and almost 75 percent described it as their most important concern (Nordstrom, et al., 1977). There is concern that alcoholism prevents Native American people from practicing their traditional culture and religion and from teaching that culture and religion to their children.

Another concern that emerged during the 1987 interviews on the Reservation was the increase in gambling (such as bingo, poker machines) among the Northern Cheyenne which, in some cases, causes financial problems and family neglect.

In 1986, Mara Feeney and Associates conducted extensive fieldwork regarding Northern Cheyenne residents' perception of social well-being on the Northern Cheyenne Reservation. Feeney concluded, "While most Cheyenne acknowledge that some individuals and families are better off than they were in the past, the consensus is that the Tribe as a whole, and most members, are not better off." In addition, Tribal members have witnessed improvements in facilities and services (such as schools and recreation facilities) in areas such as Colstrip, but similar improvements have not occurred on the Reservation, so the service gap between off-Reservation and on-Reservation areas has widened. The following statements were made to Feeney by Tribal members describing their perceptions about their overall well-being and whether it has improved or deteriorated in the recent past:

> "The poverty of our people is an extreme condition. A place like this is sad in a well-developed country."
>
> "Programs and jobs brought some money to the Reservation, but it all leaves as soon as it gets here. The Cheyenne don't own the businesses, so our money goes right straight out."
>
> "People are torn in every direction. We struggle over housing, jobs, education, family, Tribe, coal, ARCO, everything."

"Unemployment is on the rise again, and people are returning to alcohol."

"We are living too damn fast now. We have go to slow things down, and produce an environment here that is conducive to our own lifestyle."

"There is very high stress among our people. That is why alcoholism is such a problem. We are hog-tied. There are no jobs, no way to earn a livelihood here."

Interest in and identification with the traditional culture has increased since 1970. There has been a great deal of dissension among Tribal members about how best to renew the traditional cultural ways and adapt them to contemporary needs. Tribal income has decreased dramatically in the past few years, and unemployment has risen over the past year. As economic pressure intensifies, the tension between traditional values and economic necessity increases. Other conflicts are experienced between traditional values and the values emphasized by White society, such as competitiveness, acquisition of wealth to obtain status, and the placing of individual or nuclear family welfare above the extended family or Tribe.

As part of the 1975 Northern Cheyenne household survey, people were asked which aspects of the traditional way of life they felt were important to preserve. Seventy-four percent of the 330 people who responded to the survey named the Northern Cheyenne language as important to preserve. Many Northern Cheyenne who spoke with Feeney in 1986 expressed concern about the loss of the traditional language. The more traditional Northern Cheyenne who still speak Cheyenne in their homes expressed frustration because they feel there are many traditional concepts and kinds of knowledge that cannot be translated into the English language. Because of the link the Northern Cheyenne perceive between cultural concepts and values, the loss of the traditional language is seen as a grave threat to cultural continuity as well as social well-being. See Chapter 3, Section 3.9.N for a discussion of current (1987) cultural conditions on the Northern Cheyenne Reservation.

3.9.N Cultural Conditions

A people's world view is their most general conception of order; i.e., how the world works and their place in it. Contemporary religious values among the Northern Cheyenne cannot be easily segregated from other traditional, cultural, and heritage values which are part of the Northern Cheyenne's ethnic identity. The following description of Northern Cheyenne world view as it relates to the environment is largely abstracted from *Cultural Impacts to the Northern Cheyenne and Crow Tribes from Powder River I Federal Coal Leasing* by Deaver and Tallbull, 1988.

This document was prepared for the EIS Supplement from secondary information and from informal interviews and conversations with Northern Cheyenne cultural leaders (i.e., those recognized by community members to be knowledgeable about sacred ways and the keepers of sacred knowledge). Over 25 informal interviews were conducted on the Northern Cheyenne Reservation. This study was prepared because of the widespread concern regarding cultural issues that was evidenced at the Northern Cheyenne Scoping Meeting held for this project (BLM, 1987). Mara Feeney also indicated a widespread interest in traditional cultural world view and values on the Northern Cheyenne Reservation (Feeney, et al., 1986). A 1980 survey of all households in Ashland and Birney conducted as part of the EIS process for the proposed Monto mine, indicated that at that time approximately one-third of the Ashland Village residents and two-thirds of the Birney Village residents participated regularly in traditional spiritual activities, such as the Sun Dance or prayer meetings. The survey also reported culture and spirituality were most frequently mentioned as important aspects of the contemporary Northern Cheyenne way of life (Feeney, et al., 1986).

The world view shared by traditional Northern Cheyenne is based on the premise that the universe is animate. Man's role/place in the universe is to live in harmony with both the physical and spiritual qualities of the environment. This is not a simple directive or metaphor. It has ramifications in all aspects of Northern Cheyenne life.

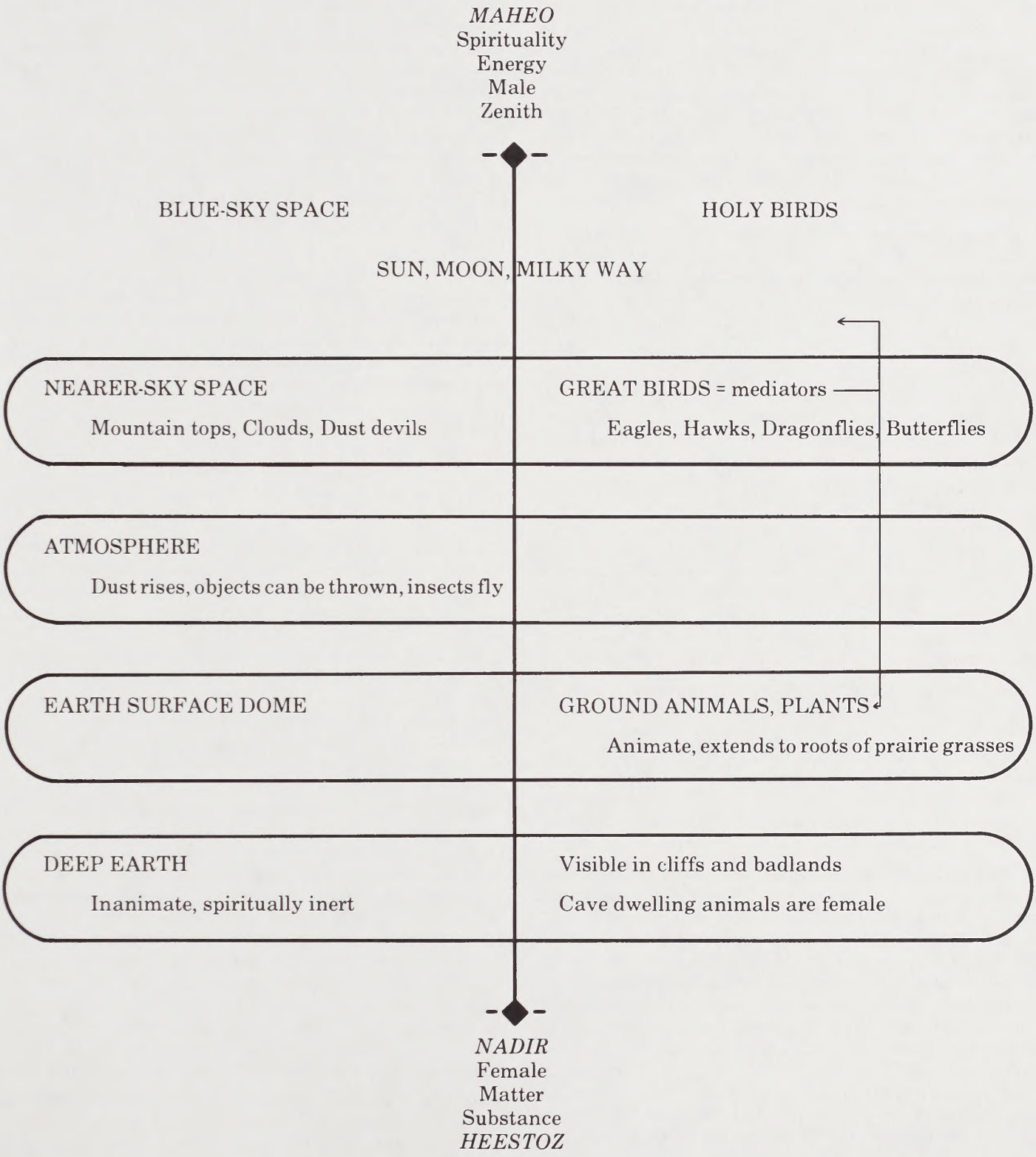
All things in the universe have spirits. These include people, plants, animals, all types of water (rivers, creeks, springs, ground water, swamps), archaeological sites, and other aspects of the physical environment like the cardinal directions. Figure 3-3 illustrates the basic spiritual structure of the universe.

Maheo, the epitome of energy/spirituality, is contrasted with Heestoz, the symbol of substance/matter. Both are sacred and necessary for the continuation of the universe. Maleness and zenith, the highest point in the universe, are associated with *Maheo*, just as femaleness and nadir, the lowest point in the universe, are associated with *Heestoz*. These concepts are understood to be complimentary and balanced in the universe. Between these two points are several levels or spaces. These are the Blue-Sky Space, the Nearer-Sky Space, the Atmosphere, the Earth-Surface Dome, and Deep Earth.

The Blue-Sky Space contains the sacred manifestations of the *Maheo*, including the sun, the night sun (the moon), and the Milky Way, which is the road to the land of the dead. The sun is a sacred life-giving entity that is necessary for the renewal of life. Blocking the sun's rays would upset the balance of spirituality (the source of all energy) and substance/matter. This is one of the reasons that the Northern Cheyenne petitioned the EPA to get a Reservationwide, Class I, air-quality standard.

The Nearer-Sky Space is inhabited by those creatures, primarily the Great Birds (eagles, hawks, dragonflies, and butterflies), that mediate between man and the sacred forces of the Blue-Sky Space. It contains dust devils, clouds, birds, tornados, and high places like mountain tops. Both prairie falcons and red-tailed hawks are classed as Great Birds in Cheyenne biological taxonomy. This means they live in the Nearer-Sky-Space and serve as messengers between men of the Earth-Surface Dome and the Spirit

Figure 3-3
Spiritual Characteristics of the Universe



Beings in the Blue-Sky Space (Moore, 1986). These birds are used as cancer medicine today (Tallbull, 1987).

The Atmosphere is in direct contact with the Earth-Surface Dome. This is the area in which dust rises, objects can be thrown, and insects fly. The Earth-Surface Dome is animate and extends to the roots of the prairie grasses. It is characterized by living things which are useful to humans who derive their material and spiritual existence from this environmental setting. When the Earth-Surface Dome is disturbed by plowing, digging holes for fence posts, planting gardens, digging basements, etc., atonement and reparations must be made to the disturbed spirits. This is generally an individual family responsibility (Tallbull, 1988). Hunting or planting gardens for food is considered respectful when appropriate atonement is made. Hunting for sport or wantonly destroying vegetation is disrespectful and unacceptable behavior.

In general, the concern with maintaining a proper, respectful relationship to the physical and spiritual aspects of the environment is an ongoing concern for the Northern Cheyenne. When people move into a new area, it is proper to pray to the spirits who live in the area, asking their forgiveness and blessings.

Animals live on the Earth-Surface Dome. In Cheyenne biological taxonomy, animals include birds, ground animals, crawling animals, and water animals. The class *zeevasoheva*, or ground animals, which inhabits the Earth-Surface Dome includes *hovan*, which basically translates as mammals and includes humans, *votostotaneo*. Mammals are divided between predators/those who "paint" (wolf, coyote, bear), game/those who do not "paint" (antelope, deer, elk, buffalo) and small animals who "paint" (lizards). In the distant past, those who paint and man were on the same side in a great race. Those who lost the race became the food source of those who won. People regard animals as relatives. A person may get more support from his animal relatives than from his biological relatives.

Game animals as well as predators have ceremonial functions. The lower leg bone of antelopes is used for pipes used in the Sun Dance. The hooves are used for dance rattles, and medicine taken from antelope throats is used to give speed to messengers. The lining of a deer esophagus is necessary for the last day of the Sun Dance, as are mule deer tails. Deer medicine also gives long wind and the ability to move quickly.

Northern Cheyenne also regard the plants of the Earth-Surface Dome as relatives. Plants are living things with spirits. There are plant families, grandparent plants, mother and father plants, plant children, and chief plants. Human children are taught that they are surrounded by many people, plant people, and that these plant people require the same things as humans: fresh air and water. Further, they are taught to respect plants. People talk to plants, give them gifts, and miss them when they have not seen them for awhile. A person may maintain a friendship with a particular tree throughout his life. This may include sacrificing his flesh to the tree. When trees are cut down or other vegetation wantonly destroyed, relatives are lost. The same dull aching of loneliness associated with the loss of a human relative is also experienced when a plant relative is destroyed. Chief plants are sought out for medicinal purposes. Personal names are taken from the spirits, birds, animals, and plants that are sources of power in major Cheyenne ceremonies (Moore, 1984; Tallbull, 1987).

There are many plants in current use by the Northern Cheyenne. For example, plants used on the south side of the Sun Dance include: cattails, man sage, june grass, red willow, chokecherry, ash, greasewood, purple corn flower root, baneberry root, cottonwood, swamp grass, and sumac. Plants can be extremely powerful and must be used with caution. The pollution from Colstrip is making some plants unsafe and forcing plant collectors to go farther afield to collect their medicines and food plants (Feeney, et al., 1986; Tallbull, 1987). Each plant has special rules about its procurement and use. This is specialized knowledge available only to those who have the right to use these plants.

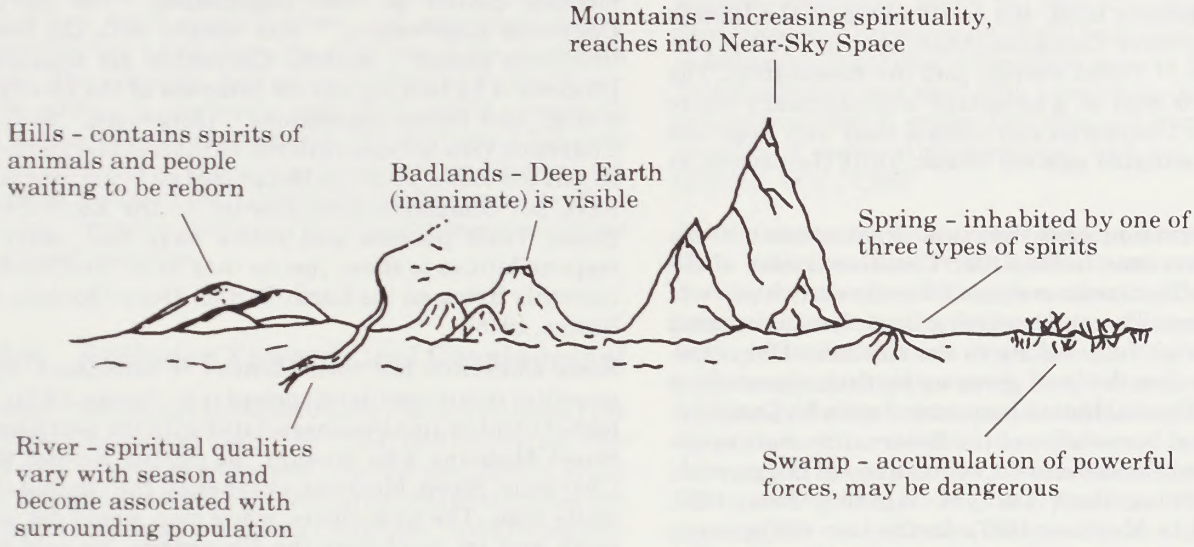
Humans develop relationships with the places they live; they become associated with that place. Locales of ceremonies (Sun Dances, sweats, Arrow Renewal, etc.) have spirits which remain in place (Littlebird in Mattson, 1987). When children are born, part of the afterbirth is saved and wrapped up and put in a tree to establish a tie with their home. There are many of these along Lame Deer Creek and in other areas. This practice continues today. One Ashland grandmother has made sure that her grandchildren will know their home by having the parents, who live out of state, send the afterbirth to her by special delivery (Parker, 1987).

Figure 3-4 illustrates the basic cosmological qualities of visible topographic features in the Earth-Surface Dome. The earth's surface is animate. Hills contain the spirits of animals and people waiting to be reborn. Extinct species are those that the *Maheo* does not allow to be reborn. The present increasing rate of extinction of species is explained by the fact that the *Maheo* is withholding the animals in order to protect them from the destruction caused by the actions of industrial development (Schlesier, 1986). Exposed cliffs or badlands are Deep Earth and are inanimate. Mountain tops and other high places are places of increasing spirituality because they reach the realm of Nearer-Sky Space. Surface water is alive, ever moving, and has spiritual qualities. Springs are the homes of spirits. Offerings are commonly left at springs today. For example, there is a spring on the divide between Birney village and Lame Deer that the Birney people leave offerings at and clean up when it is polluted by vandalism (Washington, 1987). Three varieties of spirits live in springs. The first have short brown hair/fur-like prairie dogs. The second type are white and furry. These do not want to associate with anyone and thunder always strikes around them. People should not frequent springs associated with these spirits. The third type are black. These spirits/animals come out to pay their respects when ceremonies are held.

Rivers have spiritual qualities that become associated with the people who live around them. People belong to rivers, and rivers belong to the people. Offerings of cloth and

FIGURE 3-4

The Topography and Characteristics of the Earth Surface Dome (*Votostoom*)



tobacco are made to rivers. The people of Birney and Ashland Villages have a close relationship with the Tongue River. Medicine plants grow right along the river on the east side. The river is used for watering horses, watering gardens, and washing hides. Basic wild food plants are dependent on this water source (E. Fighting Bear, 1987).

Swamps are filled with many spirits and may be dangerous due to the accumulation of power at these areas. The Northern Cheyenne recognize the spiritual qualities of ground water also. There are special prayers for digging wells. Ground water represents the quiet nature of the earth. It should not be disturbed.

Deep Earth is dead/sterile earth, basically all substance and, hence, most female. It is visible to man in cliffs and in the badlands. It is characterized by being spiritually inert. Animals that live in caves and burrow into dead earth (bears, badgers) are considered female.

The Cheyenne recognize four directions. These are directions, points, and spirits. One orients himself to a direction/point/spirit. This orientation has to be maintained so that one is properly placed, relative to the environmental setting. People are said to have a relationship with the East, South, and so on. For example, people who have a relationship with the East, have relationship with the sacred person *Esseneta'he*, who is associated with life and light, the color white, morning light and spring (Powell, 1969). Many things are involved in direction; for example, how the sun moves, how stars move, how Morning Star moves, seasons, colors, times of day, etc. The spiritual qualities and associations of the cardinal directions is why medicine wheels are laid down in set directional patterns, and the Holy Lodges of the Arrow and Hat are set up in the same direction every time.

The Cheyenne people have received two covenants which continue to sustain the people today. These are the Sacred Arrows and the Sacred Buffalo Hat. Each covenant has a keeper. Proper maintenance of these covenants is necessary for the survival of the Cheyenne. The principle role of the Chiefs and the Military Societies is the care of these two covenants. The Sacred Arrows are in the care of the Southern Cheyennes and the Sacred Hat is in the care of the Northern Cheyennes. Men of the Northern Cheyenne who are associated with the Arrow Lodge have participated in the selection of a new Arrow Keeper. The Holy Lodge of the Sacred Hat is usually kept in Birney Village, but is currently (January, 1988) in Lame Deer. The Northern Cheyenne Tribe financially subsidizes the care of the Sacred Hat (U.S. Senate, 1978; Elkshoulder, 1987; Tallbull, 1987; White Dirt, 1987). These two covenants hold the Cheyenne together as a people. In the 1970s, an arrow ceremony was held in which a prayer was offered to all the spirits. They were asked to help the Northern Cheyenne to avoid coal development on the Reservation and to strengthen the spiritual commitment of the people. Anyone who speaks against this is speaking not only against the people who gave the prayer, but is arguing against the Sacred Arrows themselves. A Cheyenne could do nothing worse.

The Sun Dance/New Life Lodge is the major group ceremony of the Northern Cheyenne traditional religious life. It is central and indispensable to the religion and involves a renewal of both the earth and the Cheyenne. It is associated with the covenant of the Sacred Hat. Both the Sun Dance and the Sacred Hat were brought to the Cheyenne by the culture hero, Erect Horns.

Northern Cheyenne elders regularly compare the covenants of the Sacred Arrows and the Sacred Hat to the laws of

Moses as expressed in the Old Testament of the Bible. They regard them as being the direct gift of the *Maheo*, and literally, the God-given laws governing Cheyenne people. The laws must be obeyed and the covenants maintained for the Cheyenne to continue to exist as a people.

On a more secular level, the relationship to the land is critical to Northern Cheyenne ethnic identity. This is particularly true of Tribal identity and the Reservation. The Reservation is seen as a homeland and sanctuary where the Northern Cheyennes can control their own lives and not be discriminated against (Weist, 1970; Nordstrom, et al., 1977).

One off-Reservation area that is of great concern to the Northern Cheyenne is the Otter Creek area east of the Reservation. This concern stems from the early history of the Reservation. The land bordering Otter Creek is believed by many to rightfully belong to the Northern Cheyenne. They believe that the land given up by their ancestors at the behest of Special Indian Inspector, James McLaughlin, when the final boundaries of the Reservation were established were only leased and not sold (Limpy in Boggs, et al., 1980; E. Fighting Bear, 1987; M. Fighting Bear, 1987; Strange Owl in Mattson, 1987). In the late 1800s, many Northern Cheyenne homesteaded east of the Tongue River and along Otter Creek with the encouragement of the Army at Fort Keogh. At the same time, whites homesteaded within the boundaries of the Reservation. Some of these were legal entries, but others were illegal. When McLaughlin came to the Tongue River Reservation in 1899, he was charged with trying to remove the Northern Cheyenne to part of the Crow Reservation. Failing that, he was to establish firm boundaries for a Cheyenne Reservation, and make the whites move out of this territory and get all the Cheyenne to move into it. Neither the Cheyenne nor the Crow were interested in having the Northern Cheyenne move onto the Crow Reservation. McLaughlin went to work on establishing boundaries. He eventually decided on the Tongue River as the logical eastern boundary of the Reservation. He bought the land of both the legal and illegal white homesteaders within the Reservation. He paid 36 white settlers $140,445 for their claims. The Northern Cheyenne living east of the Tongue were given $25 for moving expenses (46 families got a total of $1,150) (McLaughlin, 1899; Dusenberry, 1956). The disparity is obvious and enormous. It is not surprising, then, that many descendants of these 46 families argue that the land is theirs and was only leased. Boggs and others have suggested that because the eastern homesteaders were given lands on the new Reservation, McLaughlin perceived he was trading one parcel for another (Boggs, et al., 1980). However, this is never made explicit in McLaughlin's report, and so the documentation remains ambiguous. Clearly, this is not the view of the descendants of the 46 families.

It is within the living memory of the Northern Cheyenne that they came very close to extinction when they left their relatives in the south to return to their northern homeland. Little Wolf and Morning Star (Dull Knife) are regarded as saviors of their people. Their pictures and the statement, "LITTLE WOLF AND MORNING STAR — Out of defeat and exile they led us back to Montana and won our Cheyenne homeland that we will keep forever" is found on all Tribal stationery. The importance of the Reservation and its surroundings to the Northern Cheyenne's ethnic identity cannot be over emphasized. "The Northern Cheyenne Reservation. . .was bought with the lives of Cheyenne people. . .modern Cheyennes are obligated to preserve it by looking out for interests of the elderly, the young, and future generations." (Jorgensen, 1984). The Cheyenne view unborn children as individuals journeying to join the Tribe. They are recognized as living people who have not completed their journey to the Earth-Surface Dome. Their parents and elders have real, every day responsibilities to them, just as they do to the Cheyennes currently living on the Earth-Surface Dome (Sooktis, 1976; Straus, 1978).

Some Cheyenne feel their identity is threatened by the potential future coal development (e.g., Spang, 1975). This loss of identity has been associated with the prophecies of Sweet Medicine who brought the Sacred Arrows to the Cheyenne. Sweet Medicine prophesied the coming of the white man. The newcomers/white men would dig up the earth and try to change the Cheyennes. He said if the Cheyennes followed the white men's ways, they would no longer be Cheyennes (Feeney, et al., 1986).

The Cheyenne fear a wide array of social problems associated with the increasing population density and increasing contacts with the dominant society associated with coal development. They fear that their children will be increasingly the targets of discrimination. They have already noted increasing pressures of this type from the construction of Colstrip (Parker, 1987; Washington, 1987; H. Fighting Bear, 1987; M. Fighting Bear, 1987). They resist losing their relative isolation because children will not be able to grow up free of stress in a calm setting (Parker, 1987; Robinson, 1987). They will not be able to range free over a rural landscape and develop a proper respect for the environment (Robinson, 1987). Also, problems caused by alcoholism and drug abuse will increase with the rise in population density. There will be more traffic, traffic accidents, and, in general, a greater need for an adequately funded police force.

Another source of anxiety associated with coal development is language loss. There are problems in translation from Cheyenne to English, because it is extremely difficult to make sure all the different shades of meaning in particular Cheyenne concepts are expressed in English. This difficulty is not surprising because the grammatical and syntactic structure of Cheyenne and English are very different. People's most basic assumptions about how the world works are encoded in their language. For example, the term for friend in Cheyenne differs according to whether the speaker is male or female and can only be used about a person of the same sex as the speaker (LRD/NCT, 1976). The Cheyenne language contains a unique expression of Cheyenne beliefs and values (NCPO, 1981). Consequently, language loss represents a severe impact to Northern Cheyenne beliefs and values.

The Northern Cheyenne see their Reservation and its surroundings as an intensely beautiful and meaningful area (G. Small, 1987; Robinson, 1987). Its topographic features are markers of Cheyenne history, and its spiritual attributes provides them a sanctuary in an uncertain world. It is a place where they can speak their own language, honor their elders, teach their children, and meet their family responsibilities away from the criticism of the dominant society. The seclusion and privacy afforded by the Reservation setting is positively evaluated and is something they want to preserve and protect. The Northern Cheyenne use secluded and private spaces for prayer, meditation and, in general, communicating with the spiritual aspects of the universe. Privacy is necessary for the continuation of these ceremonial activities.

3.10.N Attitudes Toward Coal Development

Northern Cheyenne attitudes toward coal development are complex. This section describes Tribal and individual attitudes that have been expressed over the past decade and a half. The main sources of information about attitudes are statements made by Northern Cheyenne Tribal members at public hearings on coal development (such as the scoping meeting on the EIS for the Round II Coal Lease Sale in the Powder River Region held on May 26, 1983, at Ashland), in legal depositions, in the 1975 and 1980 Northern Cheyenne household surveys, and during informal interviews and public meetings held in January 1986, as part of the field research for the Feeney project. A scoping meeting for this EIS Supplement was held on the Northern Cheyenne Reservation in April 1987 (see BLM, 1987). See Feeney, et al., 1986, for a more indepth discussion of Northern Cheyenne attitudes toward coal development.

Since 1971, when more than half of the Northern Cheyenne Reservation was permitted to coal companies, the Tribal government has worked to control on-Reservation, as well as off-Reservation, coal development. In 1973, the Tribal Council petitioned the Secretary of the Interior to cancel all Reservation coal permits and leases because ". . .the Tribe had come to realize that our coal resources were both larger and worth more per ton than we had been led to believe, and had come to realize also the adverse social and environmental implications of the leases. . ." (Nordstrom, et al., 1977). The Tribal council also sought successfully to retain mineral rights on all Reservation land through congressional and judicial action and took action to gain control over the effects of off-Reservation coal development by initiating a request and being granted Class I air quality status by the Environmental Protection Agency. See Feeney, et al., 1986, for a more indepth discussion of Tribal Council actions relating to coal development. Recently, the Tribe considered purchasing a block of power from Colstrip 4 for resale, as means of generating revenues for the Tribe. These actions have shown a determination to maximize the potential benefits of regional coal development (such as training and employment opportunities for Tribal members and possible new means of generating Tribal revenues) and minimize its potential adverse effects (such as air pollution and increased demand on Tribal facilities and services).

At present, the Tribe has no formal written policy regarding on-Reservation or off-Reservation coal development. There is a general consensus among Tribal Council members that when, and if, the issue of on-Reservation coal development is raised again, it will be decided by the Tribal membership through a referendum vote. In the meantime, Tribal officials and staff plan to continue to use all legal means available to ensure that they will participate in the benefits of regional development, and not just its costs (Feeney, et al., 1986).

For the most part, Tribal members support the formal positions taken by their Tribal government concerning coal development and see Tribal Council actions as having won important gains for the Tribe and its members. With regard to the question of future development, however, there is a wide range of opinion among Tribal members. Considerable tension exists between prodevelopment and antidevelopment factions within the Reservation community. Almost all Tribal members feel concerned about the divisiveness and hard feelings that the issue of mineral development has caused in the community and uncertain as to what the outcome on a coal policy referendum would be at this time.

In a survey conducted in 1975, approximately 350 Tribal members were asked how they felt coal mining would affect their way of life. Seventy-two percent of those interviewed indicated that they believed their personal lives or the Cheyenne way of life would change if coal mining were to occur on or near the Reservation. Five percent of those interviewed thought their way of life would not change, and 23 percent were unsure what would happen (Nordstrom, et al., 1977).

Most of those surveyed, when asked what "good" changes might result from coal development, named economic benefits, such as jobs, more local businesses, a better standard of living, and improved financial status for Northern Cheyenne individuals and the Tribe as a whole. Some felt that coal development would also lead to improvements in community services, particularly education. When asked what "bad" effects might result from coal development, those surveyed mentioned social problems most frequently, including increases in violent crimes, alcohol and drug abuse, and alienation of Cheyenne young people from their culture and families (Nordstrom, et al., 1977). Most of these undesirable effects seemed to be associated in people's minds with the potential increase in the number of non-Native Americans living on or near the Reservation.

An extensive survey of households in Birney Village and Ashland Village, conducted in 1980 as part of the environmental review process for the proposed Montco coal mining project, included questions on residents' attitudes toward coal development. Survey results indicated that the majority of respondents in Birney Village and Ashland Village were opposed to the proposed Montco mine (NCPO, 1981).

Testimony from Tribal representatives at the 1983 Round II Scoping Meeting (Wolfchief and Dahle, 1983) indicated a deep concern for the preservation of Northern Cheyenne culture and society in the face of off-Reservation coal development. Specific concerns cited in the testimony included: impacts to the Tribal government which has broad responsibilities on the Reservation; impacts to traditional Northern Cheyenne culture, values, and language which could jeopardize the special role of the Reservation as the Northern Cheyenne homeland; impacts to Reservation communities and rural population areas; impacts to Reservation public services and facilities and public finance; examination of employment opportunities for Reservation residents; impacts resulting from Reservation population increases and off-Reservation population growth; and mitigation measures to alleviate the impacts.

In the course of field research conducted for the Feeney study from November 1985 through January 1986, members of the project team discussed attitudes toward coal development with members of the Northern Cheyenne Tribe, both informally and at district and other meetings. The impression obtained from these discussions is that many Northern Cheyenne currently oppose coal development, at least on the Reservation, because the potential social and cultural costs are not worth the risk for potential monetary gains. A few individuals, however, said they thought the Tribe definitely should develop the coal on the Reservation because Tribal members' economic needs and social problems are so great.

Many of the statements made by Tribal members indicate a sense of disillusionment and resignation to current economic facts. Most Northern Cheyenne agree that jobs are desperately needed. Some of those in need of jobs are willing to seek employment in the coal and utility companies operating off the Reservation. Many Tribal members, and the Council, feel powerless to prevent coal development in southeastern Montana. In spite of the conflict it causes with traditional values and attitudes toward land and resources, many feel that if mining is going to occur in the area anyway, the Tribe and its members should try to reap some of its benefits as well as bearing some of its costs.

Other Northern Cheyenne, particularly some of the elders and the more traditional ones, remain firmly against energy development because of its disruption to the land and environment. They recognize that there is a need for jobs on the Reservation but feel that other types of jobs that are less disruptive to the land and to traditional cultural values must be found.

The attitudes of individual Tribal members toward coal development off the Reservation reflected their perceptions about whether, and to what extent, they or their friends and family were benefiting from it. Those who are now benefiting from coal-related employment, or who aspire to do so, seemed to be in favor of this development. Those who had been refused coal-related jobs, or who were not interested for one reason or another, felt less positive about regional coal development. Many cited both positive effects (mostly jobs) and negative effects (environmental pollution, increased traffic, and drug and alcohol problems) that they believed were associated with the coal mines and power plants that have been constructed since 1970.

Most Northern Cheyenne interviewed early in 1986 (Feeney, et al., 1986) felt that some individuals are better off today than they were in 1970 (particularly those working in coal-related jobs), but that the position of most Tribal families has stayed the same or worsened. Those who are unemployed or underemployed have developed a sense of relative deprivation, because they observe general economic prosperity in off-Reservation towns and in a small number of Tribal households, and feel that they have been left out. They are proud of those Northern Cheyenne who have developed successful careers, but they also resent the sharp contrast between their own economic position and that of those who work in nearby Colstrip.

During the BLM scoping period in spring 1987 (BLM, 1987), substantial comment was received from the Northern Cheyenne Reservation. Concerns for the physical environment such as the land, air, water, and wildlife received the most comments. Social concerns such as education, traffic, social services were also mentioned frequently, as were religious and spiritual concerns. Economic concerns such as the lack of employment for Reservation people were also identified.

3.1.C Employment

Employment on the Crow Reservation is primarily provided by the Bureau of Indian Affairs, Indian Health Service, and the Crow Tribe. Table 3-6 shows the employment of Native and non-Native Americans by sector on the Crow Reservation in 1980 (the most recent data of this sort available). A map of the Crow Reservation is located in this section (Figure 3-5).

TABLE 3-6
EMPLOYMENT BY INDUSTRY
Crow Reservation Residents
1980

Industry	Total Employment	Native American Employment	Other Employment
Agriculture	487	69	418
Forest and Fisheries	23	8	15
Mining	74	61	13
Construction	55	36	19
Manufacturing	11	11	0
Transportation and Public Utilities	46	3	43
Wholesale Trade	22	11	11
Retail Trade	111	31	80
Finance, Insurance, and Real Estate	26	0	26
Services	547	307	240
Public Administration	358	352	6
Total	1,760	889	871

Source: U.S. Bureau of the Census, Data from Summary Tape File 4, 1985. Compiled by Office of Economic Analysis, Montana Department of Commerce, December 1985.

The public administration and service industries include those workers employed by the Bureau of Indian Affairs, Indian Health Service, and Crow Tribe. Employment in services and public administration represents 74 percent of the total Native American employment for Reservation residents in 1980.

In recent years, revenue to the Crow Tribe has been declining due, in part, to reduced mining of Crow coal at the Absaloka mine. At the same time, the administrative portion of the BIA budget on the Crow Reservation has declined, while the IHS budget has remained stable. A large percentage of Native American employment on the Crow Reservation is in industry sectors that are largely dependent on funding from Tribal, BIA, or IHS sources. Reductions in Tribal revenue, and some parts of the BIA budget, has reduced employment by these agencies.

Unemployment on the Crow Reservation is estimated to be in excess of 50 percent of the available labor force in 1987. The rate fluctuates widely because of the high number of part-time and seasonal jobs on the Reservation. The Crow Tribe has expressed interest in developing some of its resources, particularly coal, to provide employment on the Reservation, but presently lacks the capital to undertake development.

Since 1980, the economy of the Montana portion of the Powder River Region has declined. A combination of poor economic factors in the coal, oil, and agriculture industries in the region has led to the general slow-down. The fall in world oil prices in the early 1980s led to less exploration and development in the region. The soft demand for coal has meant little growth in mining along with reductions in coal-related employment. Agriculture has been faced with drought conditions and generally low agricultural prices, with resultant reductions in farm income. These factors have affected the Crow Reservation.

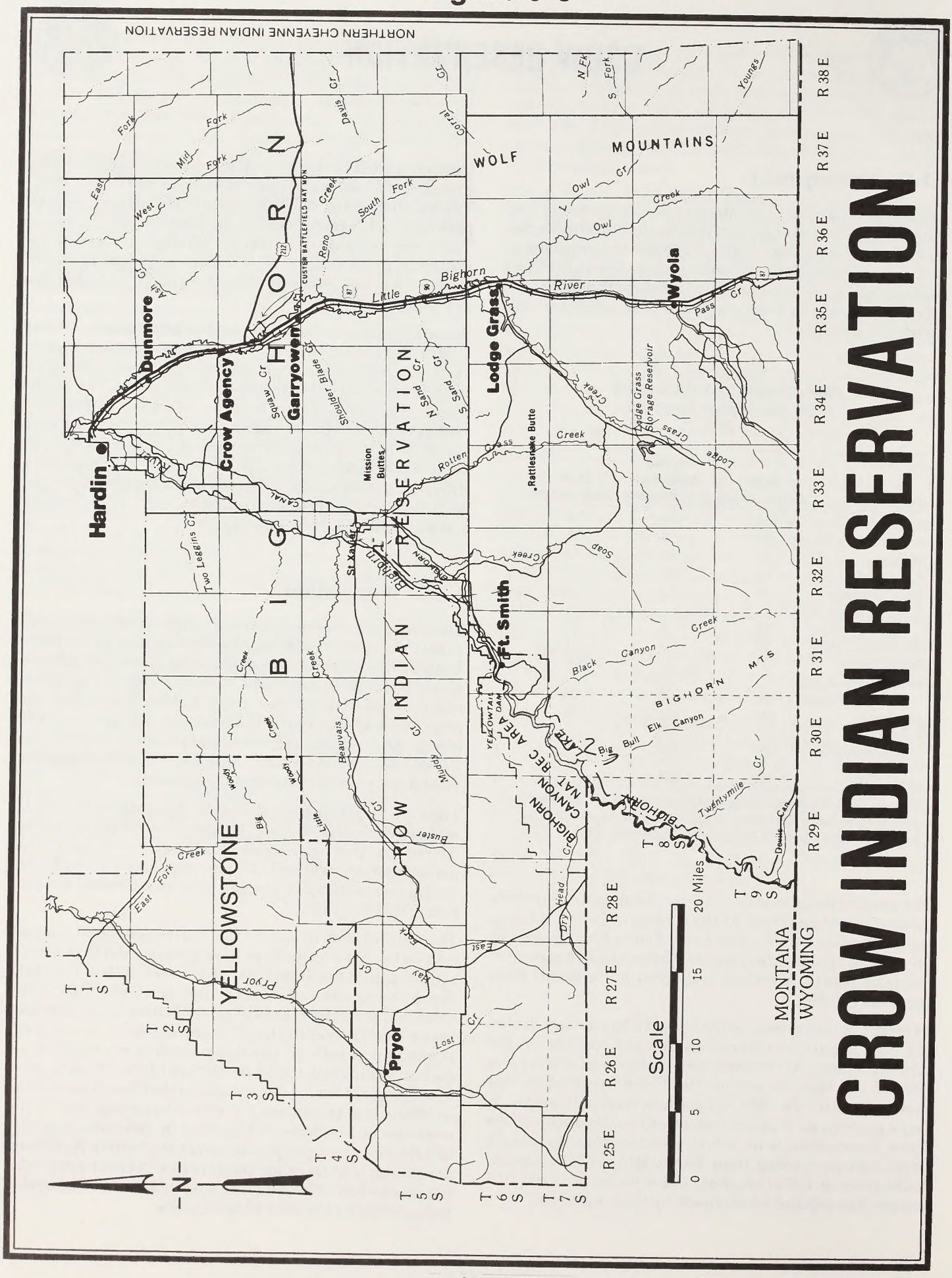
3.2.C Population

The Crow Reservation is located in Big Horn and Yellowstone Counties in the Montana portion of the Powder River Region. These counties experienced significant population gains in the 1970s and early 1980s due in part to development of regional coal resources. During this period the population of the Crow Reservation also grew significantly. Much of the increase in population on the Crow Reservation was due to the natural increase (births minus deaths) of the Native American population.

The total population on the Crow Reservation in 1987 is estimated by BLM at 7,663. Of this total, 5,826 are Native Americans, primarily members of the Crow Tribe. In the period between 1980 and 1987, the population of the Reservation increased by 13 percent from an estimated population of 6,758 in 1980.

The natural growth rate of the Native American population on the Reservation has been greater than the natural growth rate of the State of Montana over the last 10 years. Recent birth rate information from the Crow Tribe indicates that the natural growth rate of Native Americans has begun to slow over the last 3 years. However, the natural population growth on the Reservation is not expected to decline to the state level over the next 10 to 15 years. The average age of Native Americans on the Crow Reservation in 1980 was approximately 20 while the average age for all residents of the State of Montana in 1980 was approximately 29.3. A larger proportion of the Native American population is in its prime childbearing years or approaching this period. This will place upward pressure on population growth for the next 10 to 15 years.

Figure 3-5


CROW INDIAN RESERVATION
NORTHERN CHEYENNE INDIAN RESERVATION
BIGHORN
CROW INDIAN RESERVATION
YELLOWSTONE
WOLF MOUNTAINS
BIGHORN MTS
BIGHORN CANYON NAT REC AREA
YELLOWTAIL DAM
LAKE
Hardin
Crow Agency
Garryowen
Dunmore
Lodge Grass
Wyola
Pryor
Ft. Smith
Rattlesnake Butte
Mission Buttes
CUSTER BATTLEFIELD NAT MON
Bighorn River
Little Bighorn
Rotten Grass Creek
Lodge Grass Storage Reservoir
Black Canyon
Bull Elk Canyon
Twentymile Cr
Dry Head Cr
Lost Cr
Beauvais Cr
Muddy Cr
Two Leggins Cr
Shoulder Blade Cr
Shaw Cr
Davis Cr
Corral Cr
Youngs Cr
Pass Cr
Owl Creek
Soap Creek
Big Horn Canal
St Xavier
Scale
0 5 10 15 20 Miles
N
MONTANA
WYOMING
T 1 S
T 2 S
T 3 S
T 4 S
T 5 S
T 6 S
T 7 S
T 8 S
T 9 S
R 25 E
R 26 E
R 27 E
R 28 E
R 29 E
R 30 E
R 31 E
R 32 E
R 33 E
R 34 E
R 35 E
R 36 E
R 37 E
R 38 E

The Native American population of Big Horn County is approaching 50 percent of the total county population. Given the age and natural growth rates of the Native American and non-Native American population, Native Americans will constitute the majority of the population of Big Horn County by the early 1990s.

Nearby, off-Reservation communities such as Hardin, Montana, and Sheridan, Wyoming, provide services not found on the Reservation, as well as alternatives to retail business available on the Reservation. During the coal development of the 1970s and early 1980s, growth in these communities affected the residents of the Crow Reservation. Contacts between Native Americans and non-Native Americans increased because of the increased non-Native American population in the area. Traffic across the Reservation increased due to the development at Colstrip and Decker.

3.3.C Income

The level of household income on the Crow Reservation in 1986 is estimated at $37,400,000. (See Technical Report 1.) This level represents approximately 2 percent of the total household income of the six county Montana portion of the Powder River Region (Big Horn, Custer, Powder River, Rosebud, Treasure, and Yellowstone Counties). The population of the Reservation for 1986 was 5 percent of the total population of the region. Per capita income of residents of the Crow Reservation is below the level for the six-county region.

Industries which export products from the Reservation are important because income from their sales represents new money into the Crow economy. On the Crow Reservation, these industries include agriculture, forest and fisheries, mining, construction, and manufacturing.

The level of business volume on the Crow Reservation in 1986 was estimated at $13,800,000. (See Technical Report 1.) This level represents less than 1 percent of the 1986 business volume in the Montana portion of the Powder River Region. Data collected in 1986 for the BLM input/output model shows that there is a weak link between the level of household income and the level of business activity on the Reservation. Household income is, for the most part, spent off-Reservation. That income which is spent on the Reservation does not circulate long before the majority of it also flows off-Reservation. This means that increases in household income will have little effect on business activity on the Reservation. These weak links are due to the small numbers and sizes of businesses on the Crow Reservation. Many of the businesses serving the Reservation population are located off the Reservation.

Per capita income on the Crow Reservation was $5,457 in 1969, and $12,239 in 1979, an increase of 13.3 percent in constant dollars. Much of this increase was due to the limited participation of the Crow Tribe in regional growth due to coal development.

There are many reasons the numbers and sizes of businesses on the Reservation are small. The proximity of the Crow Reservation to larger communities, such as Hardin, Billings, and Sheridan limits the formation of some types of businesses. Also, since the Reservation is economically depressed in relation to other areas in the region, it does not provide good opportunities for many businesses.

Additional obstacles occur for Native Americans wishing to start a business on the Reservation. Lack of collateral is a problem for Native Americans because, in general, they have few capital assets such as fee land to use as collateral. The lack of business experience among many Native Americans also limits their ability to obtain loans for business purposes. In addition, the expansion of capital needed to sustain a business is difficult to maintain in a society where high value is placed on sharing, and less value is placed upon accumulation of wealth (Nordstrom, et al., 1977).

For the Crow Tribe to develop economically, it must attract funds from outside the Reservation. Two large influxes of income are possible within the next few years for the Crow Tribe. The Crow Tribe has already won its suit with the State of Montana on the coal severance tax issue. The actual amount of the settlement is unclear at this time. The second possible income source involves settlement between the Crow, Northern Cheyenne, and the federal government on the 107th Meridian boundary dispute. If this money becomes available, the Tribe may decide to use some of it to help develop the economy of the Reservation.

The level of employment, growth in household income, and business activity is not expected to keep up with the growth in the Reservation population. Unless the Tribe can develop a stronger economic base on the Reservation, the level of unemployment and the number of people below the poverty level are likely to increase.

Coal development in the Montana portion of the Powder River Region in the 1970s and early 1980s led to inflation of the general price level. Inflation is felt most by individuals on fixed incomes. Those employed, but whose earnings do not keep up with the cost of living, and those whose income is dependent upon transfer payments not tied to changes in the cost of living, are also affected. Many of the residents of the Crow Reservation experienced a decrease in their standard of living during those periods of increasing prices.

3.4.C Tribal Fiscal Conditions

The fiscal condition of the Crow Tribe is tied primarily to revenue from grazing and agricultural leases and from royalties from the mining of Crow coal at the Absaloka mine. Revenues, particularly from coal mining, have declined in recent years because of reduced production. The federal government provides significant funds for specific programs such as housing and general assistance on the Reservation. Federal budgets have also declined over the past 5 years and, therefore, less money has been available for Tribal programs. The level of expenditures on Tribal programs has been limited by the amount of money available to the Tribe. Data on revenues and expenditures is not available.

A source of aid available to the Tribe during coal development are grants from the Montana Coal Board. Indian Tribes can compete with state governmental agencies for grants up to a limit of 7 percent of the coal severance tax funds available for local impact aid. Funds for local impact aid are 6.65 percent of the total coal severance tax collections. For each $1 million in coal severance tax collected, $66,500 is available for local impact aid and a maximum of $4,655 is available for state agencies and Indian Tribes. The Crow Tribe has not received any Coal Board funds.

The State of Montana receives 50 percent of the 12.5 percent federal royalty on federal coal mined in Montana. These funds are presently earmarked by the legislature to help fund the school foundation program which assists all of the public schools in the state.

3.5.C Tribal Government

The basic unit of Crow Tribal government is the Tribal Council which is made up of all members of the Crow Tribe over 18 years old. This Council meets four times a year to discuss issues and pass resolutions. The day-to-day operation of the Tribal government is the responsibility of four elected officials: the Chairman, Vice Chairman, Secretary, and Vice Secretary. In addition, the Council delegates specific authority to several committees to oversee and operate specific programs. Each committee operates under a plan of operation which requires Council approval to change. Many of these committees depend upon outside funding for their budgets which means the number of committees fluctuates with available funds. An Executive Committee sets the agenda for meetings of the full Tribal Council. Also, the Executive Committee attempts to coordinate the activities of the other Tribal government committees.

During the 1970s, a number of committees were formed to handle technical issues related to energy development and its environmental effects. These committees, as well as others established by the Tribal Council, operate under plans of operation. These plans tend to be very specific and require the approval of the Tribal Council to increase their scope. As the complexity of government increases, the need for additional committees is likely to deal with the day-to-day administration of specific programs.

A voting rights case in which members of the Crow Tribe successfully sued Big Horn County for voting rights violations increases the potential that the Crow Tribe will have more political power in the affairs of Big Horn County. Another longstanding issue facing the Tribe is the question of the form of government. Several times in the past, moves have been made to change from a Tribal council, made up of all members of the Tribe over 18, to a representative form of government. In the past, one of the primary arguments for changing to a representative form of government was that it would allow the government to respond more quickly to outside pressures and provide a more efficient government. As the population grows, the form of government is likely to again come up for debate.

3.6.C Housing/Services/Infrastructure

This section describes housing, services, and infrastructure on the Crow Reservation as of fall 1987. It should be noted that Tribal, BIA, and other programs that affect housing, services, and infrastructure can change rapidly when funding levels, personnel, program goals, and program administration change. Therefore, changes in service provision may have occurred since this document was prepared.

Housing

In 1985, there were approximately 1,258 permanent housing units occupied by Native Americans on the Crow Reservation. There is no 1985 data for counts of housing units occupied by non-Native Americans on the Crow Reservation. However, the 1980 Census of Housing indicates 700 units were occupied by non-Native Americans in 1980. Except for 141 units constructed with HUD funds since 1980, very little housing for either Native or non-Native Americans has been built recently on the Reservation. A 1985 survey of the housing occupied by Crow Tribal Members (the most recent data available) indicated 634 occupied units were in substandard condition with 155 units needing replacement (Crow Community Development Joint Venture, 1985).

A severe shortage of HUD and private rental and owned units on the Reservation currently exists with very little turnover occurring. Native Americans seeking housing on the Reservation typically move in with family or friends when vacant housing is unavailable; crowding is a result of the housing shortage. The 1985 survey verified that crowding is a problem with over 50 percent of the housing units of Crow Tribal members being occupied by more than one family and over 80 percent occupied by four or more persons. The Crow Housing Authority currently has 381 families on their low-rent housing waiting list, 243 families on their mutual help (homes to purchase) waiting list, and 97 elderly waiting for senior citizen housing, for a total of 721 units needed (Plentyhawk, 1987). Further HUD housing development is dependent upon congressional authorization of funds. Funding in the past has not kept up with demand. The capital expenditures necessary to meet the 1987 housing demand would total $40,560,000 in 1985 dollars.

Water and Sewer

Water and sewer are not discussed because no impacts are expected from any of the three leasing alternatives.

Solid Waste

Solid waste is not discussed because no impacts are expected from any of the three leasing alternatives.

Education

Students living in the communities of Crow Agency, Lodge Grass, and Wyola attend a variety of schools. Wyola stu-

dents attend Wyola Elementary and Lodge Grass High School. Lodge Grass students attend Lodge Grass Elementary School and Lodge Grass High School. Crow Agency students attend Crow Agency Elementary, Hardin Middle School, and Hardin High School. In addition, some Reservation elementary students attend Hardin Primary School (Grades 1-3) and Hardin Intermediate (Grades 3-6). Some elementary students from Crow Agency and Lodge Grass attend Pretty Eagle Catholic School at St. Xavier. Bus service is provided by the school to and from Crow Agency and Lodge Grass.

Hardin Intermediate School, Hardin Middle School, and Hardin High School are all about 40 percent Native American (predominately Crow). Hardin Primary School is about 30 percent Native American (predominately Crow). Problems cited at these schools include high student dropout rates, interracial conflict, lack of Crow culture and language programs, lack of Native American teachers to act as role models, and lack of intercultural programs that would promote understanding between the different cultures. There have been reports of problems between Native American and non-Native American students and between Native American students and teachers, particularly at the junior high school level. There is interest on the Reservation in having a separate public high school district for the northeast area of the Crow Reservation, but that is not possible under current law. Districts are determined by distance, and Crow Agency is not considered far enough away from Hardin to warrant a separate district.

Health Care

Native Americans have a notably higher incidence of certain infectious diseases and chronic illnesses and have a lower life expectancy than other Americans. Statistics comparing Crow and Northern Cheyenne causes of death with rates for the overall U.S. population indicate that the Northern Cheyenne and Crow had notably higher death rates from motor vehicle accidents, all other accidents, cirrhosis of the liver, suicides, homicides, perinatal morbidity and mortality, diabetes, congenital anomalies, and tuberculosis. Northern Cheyenne are included here because available statistics combine the two Tribes. At the same time, these groups had lower rates for heart diseases, tumors, cerebrovascular diseases, and arteriosclerosis (Hartfield, 1985). On the whole, life expectancies for the Crow people are much lower than those of their non-Native American neighbors (Health and Marketing West, 1986).

Health care on the Crow Reservation is provided to all Native Americans by the IHS. Except for ambulance and emergency care, no medical services are currently available to non-Native Americans on the Reservation. Outpatient care for Native Americans living at Crow Agency, Lodge Grass, and Wyola is provided by the Crow Agency Hospital and Lodge Grass Clinic. There is also a clinic in Pryor. Major medical care is provided by the Crow Agency Hospital and other regional medical facilities. The Crow Agency Hospital also provides major medical care to the Northern Cheyenne Reservation. Care at the other regional facilities is paid for by Contract Health Service (CHS) funds. Alcoholism services are provided by the Tribal Health Department through an IHS contract. A variety of other types of health care services such as nutrition counseling, mental health services, dental care, and health education are available on the Reservation.

The hospital and clinics on the Crow Reservation have a staff of 7 doctors, 4 dentists, 2 physician assistants, and 14 outpatient care nurses. There is currently (1987) a need for one additional doctor, four outpatient care nurses, two physician assistants, and one half-time dentist (Doney, 1987). There are plans to build a new 24-bed IHS hospital with expanded services at Crow Agency. The hospital could be completed as early as 1991 if funding is available. Emergency care, which is available to anyone, is adequate in terms of staff and equipment (there is a doctor in-house 24 hours per day); however, space is inadequate. The biggest health care problems on the Reservation are lack of staff and space to meet needs. In addition, a chronic shortage exists of CHS funds which are used for treatment not available on the Reservation. The completion of the new hospital would reduce the demand for CHS funds because the new hospital would offer treatment not currently available on the Reservation.

Alcoholism and drug abuse are considered major health problems on the Crow Reservation. These problems are increasing among Reservation young people. Alcoholism and drug abuse are linked to high incidences of accidents, suicide, cirrhosis of the liver, and other alcohol-related diseases. The alcoholism treatment program on the Crow Reservation is in the process of being restructured. Detoxification and inpatient services are being phased out, and aftercare, prevention, family programs, and services for youths are being emphasized. Additional trained counselors and an on-Reservation treatment center are needed (Wallace, 1987). People in need of long-term treatment are sent to a variety of treatment centers. However, there is a long waiting period for most treatment centers which tends to deter followthrough. According to Tennyson Doney (1987), the IHS Unit Director, there is increasing willingness on the Reservation to address alcoholism and associated problems.

The IHS provides mental health services such as crisis intervention, counseling, and a battered spouse program with two social workers, a social worker associate, and a contract with a child and adolescent psychiatrist for 2 days a month. There is a need for a full-time psychologist.

Ambulance services on the Reservation are currently provided through an IHS contract with the Big Horn County ambulance service located in Hardin. Ambulances and crews are located in Hardin and Lodge Grass. Three ambulances are located in Hardin which have six full-time employees and four part-time employees. According to Jim Karn, the Director of the Hardin Ambulance Service (1987), the number of staff and ambulances are adequate. The service makes about 60-65 runs to the Reservation each month. In 1987, 32 of these runs (approximately 4 percent) were in response to motor vehicle accidents. Two ambulances are operated out of Lodge Grass; the communication system and vehicles are provided by the Hardin ambulance

service. Eight volunteers, including three Emergency Medical Technicians (EMTs), work with the service. More volunteers and a new ambulance hall in Lodge Grass are needed (Weigand, 1987). The service makes approximately 20 runs a month. About 25 percent of these runs are in response to motor vehicle accidents. The major problem with Reservation ambulance services is the time it takes to get to Crow Agency or outlying areas. For emergencies at Crow Agency, ambulances must make the 15-mile trip from Hardin. According to the IHS Unit Director (Doney, 1987), an ambulance or first responder unit, to stabilize patients, is needed in each community. Native Americans picked up by ambulances are usually taken to the Crow Agency Hospital. Non-Native Americans are usually taken to either the Hardin or Sheridan hospitals. In severe cases, Native Americans and non-Native Americans may be taken directly to a Billings hospital.

Law Enforcement

Law enforcement services on the Crow Reservation are provided by seven entities: the Tribe; the BIA; the National Park Service; and city, state, county, and federal law enforcement agencies. Tribal services include the Tribal Prosecutor and Tribal Courts. The BIA provides the BIA Law Enforcement Services. The National Park Service serves the Fort Smith and Custer Battlefield areas. Federal law enforcement agencies providing services to the Reservation include the FBI, U.S. Marshall, U.S. Attorney, and Federal Courts. State services are provided by the Montana Highway Patrol, county services by the Big Horn county prosecutors, and city services by the Lodge Grass police.

The BIA Law Enforcement Services (herein known as the BIA Police or Police) have the primary responsibility for maintaining law and order on the Reservation. They provide the initial response to most calls or reports concerning criminal activity on the Reservation. Police facilities include a public safety office which provides office, dispatch, and detention facilities. The BIA police are trained at the BIA Indian Police Academy. Currently (1987), there are 12 uniformed police, and 9 vehicles. Four officers are stationed in the Lodge Grass/Wyola area, and one is stationed in Pryor. The remainder are stationed in Crow Agency. Patrol coverage in outlying areas is limited. There is a need for 18 to 20 uniformed officers (Pease, 1987) to adequately cover outlying areas. The expenditures to provide adequate law enforcement officer coverage to the Reservation would be capital costs of $88,000 and annual operating costs of $176,000 (1985 dollars).

Jurisdictional issues on the Reservation are complex and generally depend on the type of crime committed. For example, there is no Tribal criminal jurisdiction over non-Native Americans. However, non-Native Americans may be detained until pickup by county or state officials, depending upon the offense. While the scope of Tribal civil jurisdiction is broader, it is still not fully defined. These jurisdictional issues are the subject of a growing body of case law.

Alcohol is prohibited on the Crow Reservation. Alcohol possession, intoxication, and alcohol-related offenses accounted for a large proportion of the arrests made on the Crow Reservation in 1985 (BIA, 1986). Police work in noncriminal activity such as responding to accidents or requests for assistance, peacekeeping, serving civil papers, etc., occupies the bulk of an officer's time. In 1985, for example, police made 1,830 arrests for misdemeanor criminal activity and traffic offenses. However, the department responded to 33,254 "nonenforcement" (i.e., noncriminal activity) calls. In total, 35,414 incidents of all types were reported to the police which led to 1,841 arrests.

The Tribal Court is funded by BIA, fines collected by the court, and the Tribe when money is available. The Tribal Court's jurisdiction is limited to adjudication involving Crow Tribal code, misdemeanor criminal actions, and civil cases. Most civil cases involve family matters and commercial transactions. Criminal cases include possession of intoxicants, driving under the influence of intoxicants (DUI), assault, reckless driving, and alcohol- or drug-related offenses (Birdbear, 1987). Most cases tried in the Tribal Courts result from arrests made by the BIA police. The maximum sentence that can be imposed by the Tribal Court is 6 months in jail and/or a $500 fine.

The Tribe is currently in the process of changing the Tribal Constitution to establish the judicial branch as a separate government branch. After this is completed, a new law and order code may be adopted to address/clarify the following issues (Old Horn, 1987):

(1) Expand hunting and fishing codes

(2) Increase fines and punishment that can be levied by the Tribal court

(3) Clarify and establish authority on civil offenses

(4) Clarify language with regard to child custody.

Major crimes are referred to the U.S. Attorney for prosecution. Federal involvement is generally triggered by 1 of 16 major federal crimes, as defined by the Major Crimes Act, or the involvement of non-Native Americans. The major crimes involve murder, arson, rape, assault with a dangerous weapon, burglary, and various other felonies. The U.S. Attorney's Office currently handles major cases but will not prosecute lesser offenses involving Native Americans and non-Native Americans. Where jurisdiction exists, lesser offenses are usually handled in Tribal Court. Currently, there is one BIA Special Officer/Criminal Investigator on the Reservation. This individual is also the Police Captain. FBI and U.S. Marshall support is available in Billings. The BIA police are generally involved in the initial detention of suspects. In cases involving crimes of non-Native Americans against Native Americans on the Reservation, BIA police are required to call in county or state officials. Until 1983, these cases were prosecuted in State Court. A Montana Supreme Court decision in 1983 (*Montana* v *Greenwalt*) held, however, that the State has no jurisdiction to prosecute non-Native Americans for crimes against Native Americans that occur on a Reservation. Because the Tribal Court also does not have criminal

jurisdiction over non-Native Americans, prosecution must occur in Federal Court. However, the Federal Court is reluctant to prosecute misdemeanors and minor offenses (Feeney, et al., 1986).

The Montana Highway Patrol covers Interstate 90 on the Reservation. Big Horn County has one deputy stationed in Lodge Grass and one at Fort Smith. The town of Lodge Grass has one police officer. These officers predominately deal with non-Native American offenders.

Problems with law enforcement on the Reservation include lack of funding for the police and Tribal Courts, reluctance of Highway Patrol to deal with Tribal Courts, poor working relationships among different law enforcement entities, jurisdictional disputes, problems of applying laws dealing with only certain types of land (Tribal Hunting Regulations and Trust versus fee land), and problems of enforcing laws that apply to some individuals and not others, such as alcohol laws. Recently, hunting by non-Native Americans and drug abuse cases on the Reservation have increased.

Fire Protection

The BIA Forestry Department is responsible for range and forest fires on trust lands throughout the Reservation. Seasonal crews of approximately 18 firefighters are hired from mid-June to September annually. Four pumper trucks are available. The number of firefighters and trucks are currently adequate (Bahe, 1987). The number of fires reported on trust lands averages about 100 annually, with the majority being human-caused fires starting along the interstate or railroad tracks (Bahe, 1987).

Structural fire protection is not discussed because no impacts are expected from any of the three leasing alternatives.

Roads and Railroads

Interstate 90 runs north/south across the Reservation and is the major local and commercial transportation route. Traffic volume on Interstate 90 between the Northern border of the Reservation and its junction with U.S. 212 averaged 4,558 vehicles a day from 1984 to 1986. U.S. 212 is the major east/west route on the eastern part of the Reservation (see Figure 3-5 at the front of Section 3.1.C). Traffic volume on the Crow Reservation section of U.S. 212 averaged 1,125 vehicles per day in 1984 through 1986. The eastern 12 miles of this road are currently in poor condition.

There are numerous problems with law enforcement on Reservation roads. These include: the Highway Patrol has no jurisdiction over Native Americans, BIA Police have limited jurisdiction over non-Native Americans, and the police generally lack the work force and equipment to enforce regulations.

A Burlington Northern main rail line crosses the Reservation. It runs south through Big Horn County to Sheridan, Wyoming. The line originates at Huntley, Montana, and connects Hardin, Lodge Grass, and Sheridan. Twelve to 14 trains, 2 of which are unit coal trains, travel the line daily each way (MDSL, 1983).

Recreation

Dispersed outdoor recreation activities available on the Reservation include hunting, fishing, picnicking, camping, hiking, horseback riding, snowmobiling, and off-road vehicle riding. Unrestricted year-round hunting is allowed on the Reservation for enrolled Tribal members. Hunting by nonmembers, except spouses of enrolled members, is not permitted at any time. There are reports of hunting by non-Native Americans.

Recreation facilities in Crow Agency are provided at three city parks, the school gymnasium and playground areas, and the Crow Tribal Fairgrounds. The city parks contain a total of 40 acres and provide picnic facilities in an open space park setting. Recreation facilities in Lodge Grass consist of a 3-acre city park. The Lodge Grass City park, located next to the school grounds, has picnic facilities and landscaped open space. Playground equipment, basketball courts, a football field, and a softball field are available on the school grounds in Lodge Grass.

Social Services

The social services available to Crow Tribal members are comparable to those available to other U.S. citizens and Montana residents. Services are administered by BIA, IHS, the Tribe, and the county. This results in an apparently complex and deceptively large number of social service programs on the Reservation and causes problems for persons in need of these services.

The BIA is responsible for general assistance and child welfare programs. Child welfare programs include foster care placement, adoption, and child abuse and neglect investigation. Foster care and adoptions have stayed the same over the past few years; child abuse/neglect referrals have decreased slightly. The majority of the abuse/neglect referrals are neglect cases associated with alcoholism. The staff of one social worker assigned to child welfare programs is adequate at this time (Lefthand, 1987).

Nearly 500 families/individuals are currently on general assistance (fall, 1987). The number of families/individuals who received general assistance at some time in 1987 totaled 1,052 (C. Little Light, 1988). This number has been increasing slowly for the past 6 years. Three social services representatives currently handle the general assistance workload. There is a need for a social services representative supervisor (Pretty Weasel, 1987).

The Tribal Social Services Department provides home energy supplements (Low Income Energy Assistance Program — LIEAP), commodities distribution (cheese, etc.), nutrition for pregnant women and young children (Women, Infants, and Children Program — WIC), and job training. About 14 people are currently administering these programs, including 4 social workers. Four additional social workers are needed to provide outreach into homes (Fritzler, 1987). Limits in energy funds for home heating are also currently (1987) a problem.

The IHS provides mental health services such as battered spouse, alcoholism, and counseling services. These are dis-

cussed in more detail under the section entitled "Health Care." The Big Horn County Welfare Office administers the Food Stamp Program, Aid for Families with Dependent Children (AFDC), and determines Medicaid eligibility. Services are available in Hardin and Crow Agency on a very limited basis. The expenditures needed to provide adequate social service coverage to the Reservation would be operating costs of $110,000 annually (1985 dollars), for additional social workers.

Other Services

Little Big Horn Community College was chartered by the Tribal Council in 1980 to provide educational, vocational, and technical programs. The school now provides an Associate of Arts Degree in eight areas and two certificate programs (Little Big Horn College Catalog, 1985-1987).

In the fall of 1987, there were 140 full and part-time students, with a full-time equivalent (FTE) of 98 students. About 2.5 percent of the 1987 students were non-Native Americans; this non-Native American figure is usually about 5 percent (Windy Boy, 1987). There were 4 full-time and 18 part-time faculty members in the fall of 1987.

Most of the school programs are federally funded under the Indian Higher Education Act. Payments are based on FTE Native American students. These payments have declined substantially in the past few years. The college receives no state funds from the Montana Board of Higher Education, even for non-Native American students. (Other Montana community colleges receive $3,400 per FTE from state funds.) Therefore, funding does not increase when non-Native American students attend the school. Tuition and fees cover only a very small proportion of the costs of an additional student. The funding situation in regard to non-Native American students is unlikely to change in the near future.

3.7.C Social Organization

The term "community social organization" refers to the structure and processes that organize how people in a community relate to one another. The *Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity; outside ties; distribution of resources/power; coordination and cooperation among people in the community; and patterns of personal interaction. They are included in the following discussion which is based on the Socioeconomic Impact Assessment of Shell's Youngs Creek Mine, Crow Indian Reservation, Montana (CT-ONR, 1983), and interviews conducted on the Crow Reservation in 1987. See the above report for a more indepth discussion of Crow social organization.

Crow Tribal members have a strong sense of group membership. The Crow maintain close personal and family ties, and a high degree of personal familiarity exists among members living on the Reservation and in Big Horn County. This occurs because the Crow are a small group of people with a special attachment to the Reservation as a geographic center of activity and identity.

However, there is a wide diversity of interests on the Reservation because of the clan structure, the different religious affiliations, and the presence of members of varying blood quantums. In addition, the increasing tendency for residents to leave the Reservation for military service, advanced education, or employment, and the relatively large portion of Tribal members residing outside Big Horn County have increased the diversity of backgrounds and perspectives among the Crow in the recent past. This diversity of interests, ambitions, and opinions has produced a dynamic social and political environment where issues are continually discussed.

Family and personal allegiance, as well as clan membership, age, and blood quantum are important determinants of status and access to power, resources, and influence. Interest group alliances continue to be an important aspect of Tribal government. The presence of significant numbers of non-Native American residents further complicates the social organization on the Reservation.

Increasing diverse criteria are employed to accord status and influence on the Reservation. These criteria include: material possessions, athletic ability and achievement, cultural and spiritual knowledge, political power, technical knowledge, and age. This has resulted in a corresponding increase in the complexity of the stratification system on the Reservation.

Despite these many diverse characteristics among Tribal members, there are also powerful social and cultural characteristics that serve to redistribute wealth and moderate status and wealth differentials among members. The sharing and redistribution of income and other resources continues to occur among many extended families on the Crow Reservation, acting to smooth the consequences of income differentials. However, during individual interviews on the Reservation, some voiced a concern regarding the ongoing loss/lack of concern for the extended family and sharing values by some Reservation young people. Some interviewees felt this was occurring because of increasing poverty on the Reservation, and because problems with alcohol and drugs make it difficult to practice the traditional culture.

Capacity of Communities to Absorb Change

The *Draft Environmental Impact Statement for Round II Coal Lease Sale in the Powder River Region* (BLM, 1984), summarizes 12 factors that influence the ability of a community to respond to growth and change. Observations are made about each community in the Powder River Region. This discussion concludes that the Crow Reservation has limited capacity to absorb change. Hardin is considered to have moderate capacity to absorb change, while Sheridan is considered to have a high capacity to absorb change. The potential for widespread disruption as a result of mine development is highest for communities with limited capacities to absorb change.

3.8.C Social Well-Being

This section includes discussions of both objective and subjective measures of social well-being. Obtaining information on social and economic trends for the Crow people or Reservation is difficult because information that is usually readily available for states, counties, and cities is not available for Reservations. Thus, this discussion is limited by data shortcomings.

Objective Indicators of Social Well-Being

The Native American unemployment rate on the Crow Reservation was in excess of 50 percent in 1987. This is much higher than for Big Horn County, Montana, and the nation. Census data available for 1979 indicates median family income on the Crow Reservation was $12,239 compared to $15,729 for Big Horn County. Data provided by the BIA Social Services indicate the numbers of Native American families/individuals collecting general assistance in a given year increased gradually from 984 in 1982 to 1,052 in 1987 (C. Little Light, 1987). Information on how many individuals these numbers represent is unavailable. However, a yearly caseload of approximately 1,000 families and individuals represents a significant portion of the Reservation's 1987 Native American population of 5,826.

Tribal members name alcoholism and drug abuse as one of the most serious health and social problems on the Reservation. Many people indicate that the Reservation drug abuse problem is getting worse, especially among young people (B. Little Light, 1987). Death rates associated with alcohol abuse are many times higher for the Crow than for the nation as a whole (IHS, 1987). Deaths caused by motor vehicle and other accidents, homicides, and suicides were also several times the national average rates from 1981 to 1983, and many of the deaths were alcohol and/or drug abuse related (IHS, 1987; B. Little Light, 1987).

Lack of adequate housing continues to be a serious problem on the Reservation. The 1987 housing shortfall is 721 units (Plentyhawk, 1987). Problems of crowding and substandard quality exist in many units.

Complete statistics for crime rates on the Crow Reservation are not available. The following information may underestimate actual Reservation crime rates. Information on Crow Reservation crime rates for the seven major crimes (homicide, rape, robbery, aggravated assault, burglary, larceny/theft, motor vehicle theft) for 1984 and 1985 indicate the Reservation rate to be slightly less than for the rest of Big Horn County and substantially less than for the state as a whole (BIA, 1985 and 1986; Montana Board of Crime Control, 1986). In 1985, the crime rates per 100,000 population for the Reservation, Big Horn County and Montana were 2,548, 2,759, and 4,231, respectively.

Traditional sacred ceremonies and societies such as the Sun Dance and the Sacred Tobacco Society are practiced on the Crow Reservation. Individuals go on religious fasts, use medicine bundles, practice the Peyote religion, and take sweats (Deaver, 1987). The clan system is still functioning. The Crow Fair, which is a powwow held in August of each year, is world famous.

Subjective Indicators of Social Well-Being

Data gathered through the 1977 Crow Impact Study Office household survey indicate that a comfortable, modern home and a good education for their children are the things most valued by the Crow respondents. In this same survey, the clan ways, Sun Dance, and Crow language were cited as the most important Crow traditions and customs that currently exist. A similar study conducted in 1983 (CT-ONR, 1983) indicated employment, family, housing and Indian culture to be the most important things in life. In the same survey, dances and ceremonies, family relationships, religion and language were cited as the most important Crow traditions and customs which exist today. Neither survey asked questions regarding Reservation problems.

Interviews with Crow Reservation residents (1987), indicate a concern with a loss of traditional cultural values such as the importance of the clan, extended family, and sharing values particularly among young people. Concern regarding the loss of the Crow language was also voiced. There were frequent comments that unemployment and poverty is increasing on the Reservation, causing alcoholism and drug abuse problems and an inability to practice the traditional culture and religion. Other Reservation problems that surfaced at the Crow Scoping Meeting (BLM, 1987) and in individual interviews include the high rate of Reservation unemployment, the lack of economic development on the Reservation, alcohol and drug abuse on the Reservation, and service provision concerns with schools, health care, housing, law enforcement, etc.

Crow Tribe, Office of Natural Resources (CT-ONR, 1983) summarizes Reservation perceptions of social well-being as follows:

> "Despite the rather severe problems of income and access to facilities and services (including housing) facing the Crow, the continuing vitality of Crow Tribal culture provides an important positive element to the perception of quality-of-life. The persistence of the Crow in holding onto traditional kinship patterns — i.e., the clan and extended family — leads to mutual support and assistance. Moreover, this vital system and process is the same element that has enabled the Tribe to adapt to changing conditions of the Reservation, and to seek the wisest utilization of their resources for the betterment of the Tribe. The potential for this lifestyle to persist and for the Crow to control and benefit from the development of their mineral resources provide the basis for tempered optimism that improved social well-being can be attained in the relatively near future."

This summary was written 5 years ago when the Crow Tribe was expecting to develop the on-Reservation Youngs' Creek mine. The optimism expressed at that time may be tempered by the current (1987) soft market conditions for coal.

See Chapter 3, Section 3.9.C for a discussion of current (1987) cultural conditions on the Northern Cheyenne Reservation.

3.9.C Cultural Conditions

Contemporary religious values among the Crow cannot be easily segregated from other traditional, cultural, and heritage values which are part of the Crow's ethnic identity. The following brief overview of Crow traditional beliefs and values emphasizes those aspects directly tied to the environment and is largely abstracted from *Cultural Impacts to the Northern Cheyenne and Crow Tribes from Powder River I Federal Coal Leasing* by Deaver, 1988. This document was prepared for the EIS Supplement from secondary information and from informal interviews and conversations with members of the Crow Cultural and Historical Commission, faculty at Little Big Horn Community College, and individuals who indicated cultural concerns at the Crow Scoping Meeting (BLM, 1987).

In Crow religious discourse, *baxpe* is the closest equivalent of the term sacred or holy, but it is more correctly understood as spiritual aspect. It also indicates a powerful quality. People, places, things, animals, plants, rocks, topographic features (most commonly —mountains), and the earth itself have spiritual or *baxpe* qualities or characteristics.

The creator (White Man Above, Old Man Coyote, He Who Made All Things, the Great Everywhere Spirit) infused the universe with *baxpe*. The universe consists of two clans. The Without Fires clan includes the sun, moon, stars, thunder, all land and water animals, little whirlwinds, spirits of the dead, and the Little People or *baxpe* dwarfs who reside primarily in the Pryor Mountains. Crow generally refer to members of this clan as father. They seek to communicate with the Without Fires through fasting. The Earth clan includes the earth, addressed as mother, plants, flowers, trees, and rocks. Many of the products of the Earth clan are necessary for the practice of Crow religious rituals. George Reed, Jr., current chairman of the Crow Historical and Cultural Commission (CHCC), has noted the importance of preserving such things as chokecherries, willows, and limestones for sweats. "Those that whistle" includes hawks and falcons. All members of this class of birds may be used by individual Crow for medicines. Eagle feathers are extremely important to the Tobacco Society (L. Old Coyote, 1987).

Man is not a passive feature in this universe. The spiritual forces in the universe act through him as well as on him. The world is partially structured by man's actions in the universe (Frey, 1987:178). Man has a specific role in this universe. He is a caretaker with a special responsibility to protect the environment (Ellis Knows His Gun in Smith and Guenther, 1981).

Crow seek contract with *baxpe* through fasting. *Baxpe* individuals/aspects of the environment may also be encountered when one is troubled and alone but not necessarily seeking spiritual help. All of those entities or things that have *baxpe* deserve and require respectful treatment by man. Lack of respect can have terrible consequences. For example, one group of Crow, descendants of Chief Sits In The Middle Of The Land, regard the movement of his remains (some dispute that they are actually his) to Crow Agency in the 1970s as responsible for many of the economic and social problems on the Reservation today. Burials are *baxpe*, they must never be intentionally disturbed. Any disturbance (including archaeological excavation) to graves is disrespectful. If there is unintentional disturbance, the family takes care of reburial. If the family is unknown, the responsibility falls to the CHCC.

Individual religious expression and interpretation is the norm in Crow society. Rarely will there be a consensus of opinion concerning specific details of theology (CT-ONR, 1983; Deaver, 1986; Frey, 1987). Individual Crow use different locales, personal medicine bundles, personal prayers and offerings. Essentially, they communicate with *baxpe* beings on an individual basis. There is not one Crow religion; rather there is a multiplicity of relationships between individual Crow and an animate, powerful universe. At the same time, most Crow do agree on basic theological tenets; e.g., the Pryor Mountains are the home of the Little People who may be petitioned through prayer, offerings and fasting, and who may choose to take pity on that person and give him rock medicine. Some say that the Little People moved to their current location due to the building of the Big Horn Railroad. They did not like the pollution or the noise.

When one is contacted by a spiritual being, it is because the spiritual being takes pity on the troubled or seeking individual. Commonly, the individual is told to acquire specific items which contain *baxpe*. These are kept in a medicine bundle. Bundles include such items as plants, feathers, rocks, fossils, and artifacts (prehistoric, historic, modern).

Fasting and the creation, care of, and use of bundles are ongoing religious activities among the Crow (Connor, 1970; Deaver, 1986; Frey, 1987). Bundles must be treated with respect. They may be kept at home, buried with their owners, passed on to descendants, taken to *baxpe* localities such as petroglyph sites to be opened/consulted/fed/prayed with, or used as central ritual items in ceremonies such as the Sun Dance or adoption into the Tobacco Society. It is disrespectful to disturb medicine bundles left as offerings at sites.

Much of a person's religious training comes from members of his father's clan, who are classified as uncles and aunts. These people deserve respect. They are honored by their nephews and nieces by gift giving, through asking for their blessings, and by asking them to pray at public events. It will most likely be a clan uncle who instructs a fastor on his first attempt.

Historic and prehistoric archaeological sites deserve respect. Sometimes this is due to their *baxpe* qualities. In other cases, the respect is afforded the sites because of the Crow's "historic respect and appreciation of their visible connections of the ancient ones, 'those-who-weight-down-their-tepee-covers-with-stones'" (Medicine Crow, 1987). Sites with *baxpe* qualities generally include fasting beds (often called vision quest sites), burials, rock art sites, Sun Dance localities, sweat lodges, offering sites, Medicine Wheels, and tipi ring sites. Many of these site types are being created today; e.g., fasting beds. Generally, respect is

equated with avoidance by the Crow. When sites cannot be avoided, they should be shown respect by doing as little damage as possible. For example, it is considered to be disrespectful to drive over tipi rings, but all right to walk over them. Some Crow actively try to preserve these sites by "fixing the rings," putting disturbed ring stones back in place. Tipi ring sites may have *baxpe* qualities in some cases, but, in addition, they always have heritage significance (Medicine Crow, 1987).

The land base of the Crow is an important part of their ethnic identity (BLM, 1987). Individuals regularly and repeatedly choose to live in Reservation communities even though there are few economic opportunities available. The Crow view their land as their home and sanctuary from the pressures of the dominant society. Here they can speak their own language, maintain their relationships with their relatives and follow their traditional way of life. Further, they regard Crow country as the most beautiful on earth and object to its beauty being destroyed.

The environment, including plants, animals, atmospheric forces, heavenly bodies, and the seasons, provide man with a major source of inspiration and knowledge. The ongoing everyday relationship between humans and nature is of great importance to traditional Crow.

> Closeness to the land is critical to Crow survival. The Old Man Coyote series tells of seasonal changes, . . .observances of plant and animal life and predicts the works of nature. . .we emerged from the earth. . .Coyote was a forerunner. . .the experimenter. He gets in and out of predicaments... acquires knowledge through the patterns of nature—that is why we have seven openings in the head to observe wildlife and its uses. . .(we) pattern our lifestyles after works of nature. . .we tell Coyote stories to children (L. Old Coyote, 1987).

The isolation and seclusion characteristics of the Crow area are positively evaluated by the Crow. It is necessary for them to be able to isolate themselves from other community members to fast, meditate, and communicate with the spiritual nature of the universe.

The social isolation of this area is also highly prized and positively evaluated by the Crow. The Crow do not want to be a minority on their own Reservation. Increasing population density is negatively evaluated by the Crow. It is assumed growth would bring a host of social problems: increasing discrimination and prejudice, crime, more traffic and traffic accidents, increased vandalism to archaeological sites, loss of isolation necessary for fasting, an increase in the tensions between county, state, and Tribal officials over jurisdictional issues, an increase in the use of drugs and alcohol, and, in general, that children will be introduced to many undesirable things. Several Crow have noted that these types of problems have occurred with the building of the Yellowtail Dam and the development of the Absaloka Mine. Generally, the positive affects of these developments have been seen as monetary and short-term. According to many Crow, long-term employment of significant numbers of Crow has been blocked by union activities, insensitivity of employers to the values of Crow culture, and a lack of technical training.

The feared influx of people to the Reservation and surrounding communities is also evaluated negatively because of the resulting pressure on youngsters to speak only English. This is critical in terms of traditional beliefs and values because the most basic assumptions about how the world works are encoded into a people's language. This is one of the things that makes translation so difficult. For example, it would be misleading to just translate *baxpe* as holy because most English speakers would unconsciously assume that something is either *baxpe* or not, just as they think of things either being holy or profane, but not both. In the Crow view of the world, things are commonly sacred and profane at the same time.

The traditionalists among the Crow live in an animate universe in which they maintain intimate personal relationships with the spirits that surround them. These relationships are necessary for Crow survival. Generally, they assume that it is their responsibility to ensure that these relationships can continue by treating the earth and its other inhabitants in a respectful fashion. Respect in this context often means controlled use of areas, plants, and animals but no avoidable destruction of resources. Some view reclamation for human use instead of to original conditions as respectful. More conservative traditionalists view neither actions requiring reclamation or reclamation per se as respectful. Hunting for food is respectful; hunting for sport is not. Increasing population density in the area is regarded as the cause of a wide variety of problems. Some of these have effects on beliefs and values. The loss of isolation and seclusion makes it more difficult for religious practices requiring privacy to take place. Vandalism to sites with *baxpe* qualities would become more common. There would be more pressure on schools to not teach Crow and to deemphasize nativist values. This would make it more difficult for Crow to pass on their culture to their children.

3.10.C Attitudes Toward Coal Development

Information on Crow Reservation residents' attitudes toward off-Reservation coal development is available from the Crow Scoping Meeting held in April 1987, and from individual interviews conducted on the Crow Reservation during fall 1987. Attitudes toward on-Reservation coal development have been assessed in several surveys. The results of these surveys will be discussed briefly.

Both the Crow Reservation Scoping meeting and individual interviews on the Crow Reservation indicate a high level of concern regarding the impact of off-Reservation coal development on the Reservation. Three major issues emerged: (1) the concern that off-Reservation federal coal would compete with on-Reservation coal and make it less likely that on-Reservation coal could be marketed and developed, (2) concern regarding impact to Reservation services and infrastructure and how to obtain funding for shortfalls, and (3) concern regarding the impact of regional

coal development on Crow culture and individual behaviors such as alcohol and drug abuse.

Many people on the Reservation, including Tribal officials, have expressed the concern that federal coal competes directly with Tribally owned coal; if federal coal is leased, Tribally owned coal is less likely to be leased. Tribal coal leasing is seen by some Reservation members as a way for the Tribe to raise money to save its land base and to enhance the Tribe's ability to govern itself. Currently, many people are trying to sell their Reservation-alloted trust land because of poor economic conditions on the Reservation. If Crow coal is sold, economic conditions would improve on the Reservation and fewer people would want to sell their land. Thus, the lost development potential of the coal reserves by the Tribe would not only mean more individuals would want to sell their land, but also that the Crow Tribe, because of lack of funding, would not be able to purchase the on-Reservation fee land being sold. The purchase of Reservation fee land is a goal of the Crow Tribal government. Marketing of Reservation coal is also seen as a way for the Crow to have true self-government. If the Tribe can generate its own funding, it can determine how that money is spent, and the Tribe will no longer have to depend upon the federal government to address problems.

Much concern was expressed by Reservation residents regarding Reservation services/infrastructures such as law enforcement, social services, roads, schools, and health services (such as ambulance and substance abuse services), and how they would be affected if regional coal development occurs. Several individuals mentioned that during past coal development, off-Reservation communities received impact monies, but the Reservation received none.

Concern was also expressed regarding impacts to Crow culture and Crow people from an influx of non-Native Americans. Specific issues include loss/dilution of cultural values, such as sharing, and the importance of the family, due to exposure to White values and to a lack of money to practice the traditional culture (perhaps caused by poor economic condition resulting from an inability to market Crow coal). Increases in individual problems, such as alcoholism and drug abuse which lead to problems such as family abuse, loss of employment, and increased health service needs, are also concerns.

Data from two surveys regarding Reservation coal development conducted on the Crow Reservation in the early 1980s present conflicting conclusions. One study conducted by GeoResearch (1982) in regard to impacts from present and past coal development concluded:

> "Most households. . .believe that the Tribe does not presently receive sufficient benefits from coal development to deal with the problems caused by it."

Socioeconomic impact was the greatest concern regarding present mines mentioned by respondents to the GeoResearch study.

Results of another survey reported in the Final Socioeconomic Impact Assessment of Shell's Youngs Creek Mine, Crow Reservation, Montana (CT-ONR, 1983) concluded, "a substantial number of residents of the Crow Reservation support the development of mineral resources, including specifically, coal mining. There is little strong opposition to development." Respondents to this survey overwhelmingly indicated increased employment opportunities as their reason for favoring the Youngs Creek Mine.

A third study conducted in the late 1970s indicated Reservation residents were split over whether Reservation coal should be strip mined (Crow Impact Study Office, 1977). Population changes, particularly increases in non-Native Americans, were of greatest concern to these respondents.

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter describes the effects to the Northern Cheyenne and Crow Tribes from the High Baseline Alternative. The Northern Cheyenne analysis is presented in Sections 4.1.1N through 4.1.9N; the Crow in 4.1.1C through 4.1.9C. The High Baseline Alternative describes the future economic, social, and cultural conditions that could occur on both Reservations with no Powder River Round I federal coal leasing. That analysis is the baseline future against which impacts from each of the three Leasing Alternatives 2A, 2B, and 4, are measured.

The analysis of impacts from the three leasing alternatives begins in Section 4.2 of this chapter. Impacts to the Northern Cheyenne Tribe begin in 4.2.1N; the Crow impact analysis begins in Section 4.2.1C. The impacts that are described under Leasing Alternative 2A in 1995, for example, are those changes that would occur over and above conditions that are expected to occur in 1995 under the High Baseline Alternative. Chapter 4A is organized in the same manner but assumes that the Low Baseline Alternative is the region's energy future without Powder River I federal leasing. Both Chapter 4 and 4A begin with their respective versions of the region's baseline (i.e., High Baseline or Low Baseline, respectively) and go on to measure impacts from the three leasing alternatives against each of those possible "no action" energy futures.

Detailed information regarding the methodologies utilized in this chapter is presented in the Technical Report available from the Miles City District Office.

4.1 HIGH BASELINE ALTERNATIVE

Introduction

The High Baseline Alternative includes existing mines and power generation facilities in the Montana portion of the Powder River Region, as well as the following five proposed projects: Montco mine, Wolf Mountain mine, CX Ranch mine, Greenleaf-Miller mine, and the Tongue River Railroad. These four mines and the railroad are all privately proposed ventures that do not include Powder River I coal tracts. Map 1 (see map packet) shows the High Baseline Alternative in the Powder River Region of Montana and the proximity of those projects to the Crow and Northern Cheyenne Reservations. Development of the five proposed projects in the High Baseline Alternative is not a part of the Powder River Round I federal coal sale, however, those proposed projects would affect the economy of the region if developed. Table 4-1 shows assumed production, employment, and start dates for these proposed projects.

Development of the five proposed projects depends on the demand for coal from the Montana portion of the Powder River Region. At the present time, there is excess mining capacity in the region. Therefore, if current coal market conditions persist, there is little likelihood that development of the projects associated with the High Baseline Alternative will occur. However, demand for energy minerals has changed quickly in the past and is likely to change again in the future.

TABLE 4-1
HIGH BASELINE PROJECTS

New Projects	Assumed Annual Production[1]	Assumed Start Dates		Peak Employment[2]
		Construction	Operations	
Montco Mine	6	1990	1992	199
CX Ranch Mine	8	1991	1993	265
Wolf Mountain Mine	4	1994	1996	132
Greenleaf-Miller Mine	4	1993	1995	132
Tongue River Railroad	N/A	1990	1992	58

Existing Mines	1987 Production[1]	1987 Employment
Rosebud Mine	12	347
Decker Mines	12.4	246
Spring Creek Mine	6.5	164
Big Sky Mine	3.2	109
Absaloka Mine	1.9	55

[1]Millions of tons per year.
[2]Would occur during operations phase.

Source: Company estimates; Montana Coal Council.

4.1.1N Employment

The High Baseline Alternative would increase employment on the Northern Cheyenne Reservation above the 1986 level of 515 full-time equivalent employees (FTE). Development of High Baseline projects is assumed to begin in 1990 (Table 4-1). Total direct employment of workers on these projects forecasted to reside on the Northern Cheyenne Reservation are shown in Table 4-2. For example, a total of two Native Americans and two non-Native Americans residing on the Reservation are forecasted to be employed in construction in 1990. In the year 2000, total direct employment would increase to 27 Native Americans and 15 non-Native Americans.

In addition to direct employment, future development of High Baseline projects (Map 1) would lead to indirect employment within the Montana portion of the Powder River Region. While jobs associated with direct employment would all occur off-Reservation (Table 4-2), indirect jobs associated with these projects are expected to occur either on or off the Reservation and would be associated mainly with the retail trade, construction, and service sectors. Table 4-3 shows changes in indirect, direct, and total employment resulting from the High Baseline Alternative for those workers expected to reside on the Reservation. For example, estimated employment of those indirect workers residing on the Reservation would begin in 1990 with 2 Native Americans employed and increase until 2005 when employment stabilizes at 50 Native Americans and 5 non-Native Americans employed in jobs indirectly related to the development assumed for the High Baseline Alternative.

In conclusion, there would be a significant increase in employment for Northern Cheyenne Reservation residents under the High Baseline Alternative.

TABLE 4-2
CHANGES IN DIRECT EMPLOYMENT[1] — EMPLOYEES RESIDING ON RESERVATION
HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation

	Construction		Operation		Total	
Year	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
1990	2	2	0	0	2	2
1995	4	6	22	14	26	20
2000	0	0	27	15	27	15
2005	0	0	27	15	27	15

[1] Employment of Reservation residents, jobs would occur off-Reservation at mine sites.

Source: BLM, 1988

TABLE 4-3
CHANGES IN TOTAL EMPLOYMENT[1] — EMPLOYEES RESIDING ON RESERVATION
HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation

	Indirect		Direct		Totals	
Year	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
1990	2	0	2	2	4	2
1995	41	5	26	20	67	25
2000	50	5	27	15	77	20
2005	50	5	27	15	77	20

[1] Employment of Reservation residents. Indirect jobs could occur either on or off-Reservation, direct jobs would occur off-Reservation at mine sites. Direct jobs include construction and operations employment.

Source: BLM, 1988.

4.1.2N Population

Population levels on the Northern Cheyenne Reservation are expected to increase as a result of the High Baseline Alternative. Table 4-4 shows the forecasted Reservation population totals from 1987 to 2005 under the High Baseline Alternative.

The population of the Northern Cheyenne Reservation is projected to grow by 46 percent from 1987 to 2005. This growth is due to a combination of natural increase (births minus deaths), return of former Reservation residents in search of work, and inmigration related to development of High Baseline Alternative projects. The majority of the increase under the High Baseline Alternative is due to natural increase and returning Native Americans in search of employment. The number of Native Americans returning in search of employment in High Baseline Alternative projects is uncertain. It is estimated for analysis purposes that between 200 and 250 Northern Cheyenne will return, or approximately 15 percent of the number of Northern Cheyenne Tribal members estimated to be living off-Reservation in 1990.

TABLE 4-4
TOTAL POPULATION
HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation

Year	Native American	Non-Native American	Total	Percentage Increase Over 1987
1987	3,806	565	4,371	0
1990	4,074	568	4,642	6
1995	4,804	631	5,435	24
2000	5,296	624	5,920	35
2005	5,760	624	6,384	46

Source: BLM, 1988

The communities of Lame Deer and Ashland Village (Map 1) are expected to experience the greatest population gains. Table 4-5 shows forecasted community-specific population changes from 1990 to 2005 for the High Baseline Alternative. These numbers represent the change in population associated with both direct and indirect employment opportunities only. Natural increase by community is not included in these community-specific totals. Because so many variables are involved, the Reservation residence of Northern Cheyenne currently living off the Reservation who return in search of employment, but do not find work, cannot be reliably estimated. Consequently, the numbers in Table 4-5 undercount the community-specific population growth associated with the High Baseline. However, Table 4-4 does include returning Northern Cheyenne and natural increase in the Reservation total.

Due to the Reservation housing shortage (see Chapter 3, Section 3.6.N), most Native Americans returning to the Reservation are expected to move in with relatives or friends currently residing on the Reservation. This will allow Native Americans to settle on the Reservation more easily than non-Native Americans but will further aggravate existing crowding on the Reservation. Non-Native Americans and those Native Americans not living with relatives and friends are expected to settle on the Reservation wherever housing is available. It is expected they would locate at scattered individual sites or in existing trailer courts. A summary of population levels for Native and non-Native Americans is shown in Chapter 4, Section 4.1.6N, Table 4-8.

In addition to population growth on the Northern Cheyenne Reservation, communities nearby, but off-Reservation, would see population growth from development associated with the High Baseline Alternative. Population growth in these off-Reservation communities can affect Reservation services, such as roads, law enforcement, Tribal government, and social organization.

TABLE 4-5
COMMUNITY SPECIFIC POPULATION CHANGE[1] — HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation

	1990		1995		2000		2005	
Community	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
Ashland Village	0	1	3	21	3	19	3	19
Birney Village	0	0	1	4	1	4	1	4
Busby	0	0	1	4	2	3	2	3
Lame Deer	0	2	5	33	8	30	8	30
Muddy	0	0	1	4	1	3	1	3
TOTAL	0	3	11	66	15	59	15	59

[1]Represents only the population change associated with direct and indirect employment. Changes are measured against 1987 levels.

Source: BLM, 1988

Those impacts generated from off-Reservation population growth are described in Chapter 4, Sections 4.1.5N, 4.1.6N, and 4.1.7N; Table 4-6 shows population changes for communities near the Reservation during the period 1990 to 2005 from development of the High Baseline Alternative. For example, in 2000, the population of Ashland/St. Labre would be 269 people more than the 1987 level.

Community-specific population values in this section were developed using a gravity model to apportion incoming workers and families to both on and off-Reservation communities. That model is described in detail in Technical Report 2.

In conclusion, there would be a significant increase in the population of the Northern Cheyenne Reservation under the High Baseline Alternative. This would impact services on the Reservation as described in Chapter 4, Section 4.1.6N.

4.1.3N Income

Household income on the Reservation would increase as a result of increased employment of Reservation residents under the High Baseline Alternative. Table 4-7 shows both totals and changes in household income and business activity with the High Baseline. For example, in 2005, household income on the Northern Cheyenne Reservation is forecasted to be $860,000 greater than the 1986 level of $17,960,000, a 5 percent increase.

Increases in household income on the Reservation would not proportionally increase Reservation business activity. For example, business activity on the Reservation in the year 2005 is forecasted to increase by $530,000; this represents less than 1 percent of the increase in total regional business activity resulting from the High Baseline Alternative. This indicates a weak link between the economy of the Northern Cheyenne Reservation and that of the rest of the Montana portion of the Powder River Region. In addition, a substantial portion of the household income (i.e., payroll dollars) on the Reservation is spent off the Reservation, and those funds which are spent on the Reservation do not circulate long before flowing off the Reservation. Therefore, off-Reservation development of the High Baseline projects is not expected to have a significant effect upon on-Reservation business activity. See Technical Report 1 for a description of the input/output model used to forecast changes in economic activity on the Reservation.

It is expected that large-scale regional development will lead to increased price levels. The large number of unknowns involved in forecasting future price levels precludes an accurate, quantitative assessment. However, based on studies of price increases from past development (Feeney, et al., 1986), evidence indicates that price levels have increased with large-scale regional economic development in the Powder River Region of Montana. With this past record, it is likely that there would be an increase in general price levels on the Reservation due to off-Reservation coal development. As prices increase, those households on fixed incomes or whose income does not keep up with increasing price levels would experience a decline in purchasing power. In addition, private housing prices, both on and off-Reservation, are likely to increase (see Chapter 4, Section 4.1.6N). More Reservation residents are likely to see declines in their standard of living relative to the rest of the region because fewer Reservation residents are expected to be able to take advantage of employ-

TABLE 4-6
POPULATION CHANGE[1]
COMMUNITIES ADJACENT TO
NORTHERN CHEYENNE RESERVATION
HIGH BASELINE ALTERNATIVE

	1990	1995	2000	2005
Ashland/St. Labre	32	270	269	262
Colstrip	62	182	267	358
Broadus	19	59	90	123

[1]Changes are measured against 1987 levels and includes natural increase in each community.

Source: BLM, 1988

TABLE 4-7
HOUSEHOLD INCOME AND BUSINESS ACTIVITY
HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation

Year	Total Household Income	Change[1]	Percentage Change[1]	Total Business Activity	Change[1]	Percentage Change[1]
1986	17,960,000	0	0	16,700,000	0	0
1990	16,400,000	-1,560,000	-9	15,680,000	30,000	-6
1995	18,680,000	721,000	4	16,150,000	500,000	-3
2000	18,820,000	860,000	5	16,180,000	530,000	-3
2005	18,820,000	860,000	5	16,180,000	530,000	-3

[1]Changes on this table measured against the 1986 level.

Source: BLM, 1988

ment opportunities related to coal development. Given the proximity of the Northern Cheyenne Reservation to High Baseline development and the distance from the Reservation to trade centers, such as Billings and Sheridan, the upward pressure on prices is expected to be moderate with the High Baseline Alternative.

Under the High Baseline Alternative, the increase in household income would be less than the increase in population. Therefore, for the Reservation as a whole, the level of poverty would likely increase.

By 2000, household income would increase by 5 percent over the 1986 level and 15 percent over the projected 1990 level. The increase in household income in 2000 reverses a decline which is projected to occur on the Northern Cheyenne Reservation between 1986 and 1990. For this reason, the change in household income is considered to be a significant increase. Business activity under the High Baseline Alternative is projected to be lower than 1986 levels through 2005.

4.1.4N Tribal Fiscal Conditions

Revenues

Tribal revenues are not be expected to increase under the High Baseline Alternative. Coal development off the Reservation would not generate revenues to the Tribal government, and other sources of revenue for Reservation projects and programs have disappeared as grant money from federal sources has diminished in the recent past.

The Tribe does not tax persons, property, or income on the Reservation, so any increased population or income would not lead to increases in Tribal revenues. The weak economic link between the Northern Cheyenne Reservation and the rest of the Powder River Region of Montana (see I/O model description in Technical Report 1) indicates there would be little stimulus to Reservation businesses. Tribal budgets, highly dependent upon the sale or lease of Reservation resources, have been declining since 1983 and are expected to continue to decline at least until 1990. These factors continue to produce a bleak revenue picture for the Northern Cheyenne at a time when the Tribe would experience additional demands on Tribal services due to the High Baseline Alternative (see Chapter 4, Section 4.1.6N.)

In conclusion, revenue to the Northern Cheyenne Tribe would not be significantly affected by the High Baseline Alternative.

Expenditures

Increased population levels on and nearby the Northern Cheyenne Reservation would create the need for more service expenditures. These expenditures are shown in Table 4-10; increased demands on services/facilities from the High Baseline Alternative are described in Chapter 4, Section 4.1.6N. The needed expenditures shown in that section apply only to the incoming population associated with the High Baseline Alternative and would not correct current service deficits. Needed expenditures would require funding from many sources, including the Northern Cheyenne Tribe, Bureau of Indian Affairs (BIA), Indian Health Service (IHS), and Housing and Urban Development (HUD). It is unclear whether these agencies would be able to make additional funds available to meet these expenditure needs.

Expenditures needed to meet the demand for housing and services on the Northern Cheyenne Reservation would increase significantly.

4.1.5N Tribal Government

The High Baseline Alternative would affect the Northern Cheyenne Tribal government structure and function. In recent years Tribal government has become more complex (Feeney, et al., 1986) and more involved in coordinating with outside governments, in part due to energy development in the Montana portion of the Powder River Region in the 1970s and 1980s. Population increases associated with the High Baseline Alternative on and near the Reservation, especially in the Ashland area due to the proximity to new mine tracts, could lead to more jurisdictional problems between Tribal government and state, county, and federal governments. The divided jurisdiction of law enforcement on the Reservation provides a good example. The Tribe does not have criminal jurisdiction over non-Native Americans and jurisdiction over crimes committed by Native Americans on the Reservation generally depends upon the type of crime committed. With an increasing non-Native American population in the Reservation area, the need for coordination between the BIA police and county law enforcement would increase. A summary of levels of Native American and non-Native American population on the Northern Cheyenne Reservation is shown on Table 4-8 in Chapter 4, Section 4.1.6N.

The budgets of the BIA and the Northern Cheyenne Tribe have declined in the recent past (Chapter 3, Section 3.4.N) and are expected to continue to decline at the same time that Tribal government would need to deal with an increased number of complex issues and increased coordination. Therefore, the Tribe's ability to respond to development would be further impaired. The Tribe currently provides a variety of social services, some of which are funded by BIA. As the population on the Reservation increases under the High Baseline Alternative (see Chapter 4, Table 4-4), Tribal members may request additional services and more support for existing services from the Tribal government. These increased demands would occur at a time when Tribal budgets would not allow expansion of services, a situation that could create additional conflict between the Tribal government and Tribal members.

As the complexity of government increases, a demand for more Northern Cheyenne Tribal government employment could occur. In addition, the Tribal office building, which is currently in need of repair, may have to be expanded to increase office space if the Tribe is able to obtain funds to increase Tribal employment.

Increased complexity of government on the Northern Cheyenne Reservation could mean a reduction in the amount of individual participation in government meetings by Tribal members. More issues would likely be delegated to special committees where Tribal members would be less likely to participate. This could increase the feeling among some groups on the Reservation that their views are not being heard, and that the government does not represent them. At the extreme, these feelings could lead to increased factionalism on the Reservation, resulting in more political disputes within the Tribe. Although effects to Tribal government cannot be directly quantified, population growth, increased traffic, and other growth variables can be used as proxies for the likely level of effects on Tribal government. The government of the Northern Cheyenne Tribe could be significantly affected by the High Baseline Alternative.

4.1.6N Housing, Services, Infrastructure

This section describes the effects on housing, services, and infrastructure on the Northern Cheyenne Reservation due to population growth associated with the High Baseline Alternative, including natural population increase and inmigration. Natural population increase is high among Native Americans on the Northern Cheyenne Reservation due to the high birth rate. In addition, regional coal development is expected to stimulate a migration back to the Reservation by former residents in search of employment (return-migration). Under the High Baseline Alternative, the Native American population on the Northern Cheyenne Reservation is projected to increase approximately 51 percent (1,954 people) between 1987 and 2005. Non-Native American population is projected to increase approximately 10 percent (59 people) by 2005. Since population change creates the majority of service and facility-related impacts, a summary table of population levels is presented below (Table 4-8). See Chapter 4, Tables 4-4 and 4-5 for a more detailed discussion of population changes.

Tables 4-9 and 4-10 show, respectively, the increased service demands and the associated increased expenditures and annual operating costs that are expected on the Northern Cheyenne Reservation as a result of the High Baseline Alternative. Natural population increase and inmigration of Native Americans account for most of the increase in Native American service demands, while the increase in service demands for the non-Native American population is created by the High Baseline Alternative coal projects. The service demand values are calculated using regional service-demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. Those are both described in Technical Report 3.

The section below briefly discusses each of the various services. Native American and non-Native American services are discussed separately in cases where service provision does not apply equally to both groups. The service-demand estimates and associated cost estimates in Tables 4-9 and 4-10, respectively, are based on changes over and above 1987 levels and represent providing adequate service to that increment of population change resulting from the High Baseline Alternative. A high level of concern was expressed at the Northern Cheyenne Scoping Meeting (BLM, 1987), in letters received during the scoping process and at individual interviews on the Northern Cheyenne Reservation, regarding the possible impacts to Reservation service provision from regional coal development.

Coal mine and railroad construction is projected to begin in 1990 and continue until 1996. Full production at all mines and, consequently, maximum effects to services and infrastructure, would occur in 1999 and continue for approximately 40 years (Table 4-1).

Housing

Housing demand would be very high under the High Baseline Alternative; 407 units that could accommodate families would be needed by 2005 to accommodate the popula-

TABLE 4-8
POPULATION TOTALS
HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation

1987 Population		1990		1995		2000		2005	
Native Am	Non-Native	Native Am	Non-Native	Native Am	Non-Native	Native Am	Non-Native	Native Am	Non-Native
3,806	565	4,074	568	4,804	631	5,296	624	5,760	624
Percentage Increase Over 1987 Population:		1	1	26	12	39	10	51	10

Source: BLM, 1988

TABLE 4-9
CHANGES[1] IN FACILITIES/SERVICES — HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation

	1990	1995	2000	2005
No. Housing Units That Can Accommodate Families:				
Native American Families	54	199	298	391
Non-Native American Families	1	18	16	16
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	0	1	1	1
Non-Native American Singles	1	7	4	4
Water Requirements:				
Water Flows (gpd)*	40200	149800	223500	293100
Water Storage (gpd)*	67000	249600	372600	488600
Sewage Treatment Requirements (gpd):*	26800	99800	149000	195400
Schools:				
No. Students in Grades 1-8[2]	32	125	183	239
No. Students in Grades 9-12[2]	7	28	42	54
No. Teachers in Grades 1-8[3]	2.0	7.0	10.0	13.5
No. Teachers in Grades 9-12[3]	0.5	1.5	2.5	3.0
Sq. Ft. School Space, Grades 1-8[3]	3200	12500	18300	23900
Sq. Ft. School Space, Grades 9-12[3]	900	3500	5300	6800
Health Care:				
No. of Physicians				
Native American	.5	1.5	2.0	2.5
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	.5	1.0	1.0
Non-Native American	0	0	0	0
No. Nurses				
Native American	.5	2.5	3.0	5.0
Hospital Beds				
Native American[4]	1.0	4.0	6.0	8.0
Non-Native American	0	0	0	0
Ambulance Service				
Personnel	0	0	0	5
Vehicles	0	0	0	1
Law Enforcement:				
No. of Officers	1.0	4.0	5.5	7.5
No. of Vehicles	0	1.0	2.0	2.0
Sq. Ft. Office Space	100	400	550	750
Fire Protection:				
No. of Volunteer Officers	0	0	0	0
No. of Vehicles	0	0	0	0
Sq. Ft. Office/Storage Space	0	0	0	0
Social Services:				
No. of Social Workers				
Native American	.5	2.5	3.5	4.5
Non-Native American	0	0	0	0
Population Change:				
Native American	268	998	1490	1954
Non-Native American	3	66	59	59

*gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for a description of how these numbers were calculated.

Source: BLM, 1988

TABLE 4-10
ADDITIONAL SERVICE EXPENDITURES NEEDED[1]
HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation
2005

Service	$ Needed
Housing	
Capital Costs	$20,384,000
Annual Operating Costs	183,000
Water	
Capital Costs	3,810,000
Annual Operating Costs	52,000
Sewer	
Capital Costs	4,592,000
Annual Operating Costs	33,000
Solid Waste	
Capital Costs	36,000
Annual Operating Costs	35,000
Education	
Capital Costs	2,944,000
Annual Operating Costs	1,545,000
Health Care	
Capital Costs	848,000
Annual Operating Costs	1,274,000
Law Enforcement	
Capital Costs	120,000
Annual Operating Costs	391,000
Fire Protection	
Capital Costs	
Annual Operating Costs	24,000
Roads	
Capital Costs	No reliable
Annual Operating Costs	information available
Recreation	
Capital Costs	38,000
Annual Operating Costs	66,000
Social Services	
Capital Costs	50,000
Operating Costs	162,000

[1] Figures represent increases over 1987.

All expenditure figures are in 1985 dollars. Actual expenditures required, in 2005 dollars, would likely be considerably higher depending on the inflation rate between 1985 and 2005. See Technical Reports 3 and 4 for information on how these expenditures were calculated.

Source: BLM, 1988

tion increase that is projected to occur between 1987 and 2005. Ninety-six percent of these units would be needed for Native American families. There is currently a severe shortage of units for both rent and purchase on the Reservation (Feeney, et al., 1986; M. Bearcomesout, 1987); and construction by the Northern Cheyenne Housing Authority (NCHA) to alleviate the housing shortage is limited by lack of funding. It is unlikely the 1988 deficiency of 420 units will be met by 2005, much less the provision of 407 additional units. Newly formed Native American families and Native Americans returning to the Reservation will probably live with friends or relatives, exacerbating the crowded conditions that already exist.

As development associated with the High Baseline Alternative begins, it is assumed 21 housing units that could accommodate families would become available to non-Native Americans on the Reservation. These units are assumed to come from the following sources: mobile homes or mobile home lots currently available (11 units/spaces), homes available from the current housing stock (5 units), and scattered home sites (purchased or leased on fee or allotted land) which would provide a place for a home to be built or mobile home sited (5 units/spaces). (See Technical Report 4 for a description of how housing availability was calculated.) The acquisition of these units by 16 non-Native American families (a demand created by the High Baseline Alternative) would mean less housing available to current and future Native American Reservation residents. Ashland Village and Lame Deer are the communities most likely to experience additional housing demand from non-Native Americans. Spaces for recreation vehicles and trailers are currently available at trailer parks in and near Lame Deer to accommodate up to 20 single incoming workers. Consequently, the demand for family and single housing units created by non-Native Americans would be met by available housing.

Due to the housing shortage on the Reservation, those units which are available to both Native Americans and non-Native Americans would be in great demand as a result of population growth associated with the High Baseline Alternative. This demand would put upward pressure on rents and prices for these on-Reservation units. Off-Reservation rents and prices are likely to moderate as housing supply increases due to increased capital available for construction. An increase in private housing supply on the Reservation is not likely to occur due to a lack of development capital and suitable homesites. Because prices for private housing on the Reservation are likely to remain high and in short supply for a longer time than off-Reservation, there would be an incentive for people competing for housing in the region to settle off the Reservation.

Effects on Reservation housing under this High Baseline Alternative are expected to be severe because of the high level of demand generated by Native American natural population growth that would intensify current (1987) inadequate conditions including crowded housing, and the high level of expenditures that would be needed to meet High Baseline demands.

Water and Sewer

By 2005, water availability would need to increase by 293,100 gallons a day, water storage by 488,600 gallons, and sewage treatment by 195,400 gallons a day to meet Native American needs under the High Baseline Alternative. Even if no additional housing is developed, it is prob-

able that the doubling or tripling of families in existing housing would cause existing marginally adequate systems to be stressed to meet the needs associated with the High Baseline Alternative. It is assumed that housing acquired by non-Native Americans would either be served by existing systems or by individual wells and septic tanks.

The effects on water and sewer systems under the High Baseline Alternative depend on whether additional housing is built. If HUD funds are obtained for housing, IHS funding would also be made available for matching sewer and water systems. If additional housing is not built, effects to existing water and sewer systems are expected to be moderate due to the Reservation population increase and current (1987) system problems.

Solid Waste

On the Reservation, solid waste is held at canister sites prior to being shipped to off-Reservation dumps. The population increase associated with the High Baseline Alternative would put increased pressure on the Tribe to build a canister site at Birney Village and to relocate and/or rebuild the Lame Deer site. One canister would be needed at the Birney Village site by the year 2005. Five additional canisters would be needed at the various canister sites on the Reservation (Lame Deer, Busby, Muddy, Ashland Village) by the year 2005. The current (1986-1987) problems with canister sites, (i.e., equipment, maintenance, personnel, high waste disposal costs, and fires) would probably continue. The effects on solid waste disposal from the High Baseline Alternative are moderate because of the increases in capital and operating expenditures that would be needed.

Education

A total of 651 additional school students in grades 1 through 12 are projected to reside on the Reservation by the year 2005 as a result of the High Baseline Alternative. Reservation students currently have a variety of school options available to them; see Chapter 3, Section 3.6.N for a detailed discussion of these options. By 2005, there would be a demand for an additional 16.5 teachers and 30,700 square feet of school building space at Lame Deer Elementary and Busby Tribal Schools. These figures assume Reservation students would continue to attend Lame Deer Elementary and Busby Tribal School in their 1987 proportions: 55 percent for grades 1-8 and 25 percent for grades 9-12. (See Technical Report 3 for a discussion of how Reservation student numbers were calculated.) Reservation students attending the various off-Reservation schools would generate a demand for 20 teachers and 39,900 square feet of school space by 2005. These students may be affected by project development if off-Reservation schools become crowded due to off-Reservation population increases. Coal development may act as a catalyst for the development of a high school in the Ashland area, offering another education option for Reservation students.

The current problems at all schools, particularly at the high school level, of students frequently switching between schools and high dropout rates, would continue. Northern Cheyenne students would most likely continue to attend off-Reservation schools, such as Colstrip, that offer little involvement with Northern Cheyenne culture or language, long daily commutes over poor roads and a lack of extracurricular involvement by students and parents because of the long distance between school and home.

Although many Reservation residents feel that the Colstrip schools offer an excellent educational opportunity for their children, there is concern that Reservation schools deteriorate as Reservation children transfer to off-Reservation schools; Reservation schools are highly dependent on enrollment based funding. In addition, there is concern that the social and cultural life of the Tribe will be affected by the increasing number of children attending off-Reservation schools (see Chapter 4, Section 4.1.7N). The level of these concerns would probably accelerate under the High Baseline Alternative. Effects on education are expected to be severe under the High Baseline Alternative because of the effects to Reservation schools and large number of students attending school off-Reservation.

Health Care

By the year 2005, an additional 2.5 physicians, 1 dentist, and 5 nurses would be needed under the High Baseline Alternative to meet increased medical care demands for Reservation Native Americans. Additional demands could also be placed on the Lame Deer Clinic by Native Americans moving into areas adjacent to the Reservation such as St. Labre and Ashland. There is currently no major medical care (e.g., fully staffed hospital) available on the Reservation. The Crow Agency Hospital, which serves the Northern Cheyenne Reservation, would have an increased demand for outpatient and major medical services due to population growth on the Northern Cheyenne Reservation. Additional Contract Health Service (CHS) funding from IHS would have to be made available so Native Americans could receive major medical care off-Reservation (currently there is a large deficit in this type of funding). By 2005, an additional eight hospital beds would be needed (four at Crow Agency Hospital and four at regional hospitals, see Technical Report 3) to meet Native American demand from the Northern Cheyenne Reservation as a result of the High Baseline Alternative.

On-Reservation drug and alcohol abuse would probably increase as a result of regional and Reservation population growth. This would not only generate a higher demand for addiction treatment, but would also be associated with increases in alcohol-related diseases, accidents, suicides, and other violent behavior, all of which would increase health care service demands.

No medical services are currently available to non-Native Americans on the Reservation except for urgent care and ambulance service. That situation would likely continue because the demand generated by the non-Native American population, even with the increases under this High Baseline Alternative, would not be sufficient to support a full-time doctor or dentist.

Under the High Baseline Alternative, the total number of ambulance calls in 2005 would rise at least 50 percent (an increase of 475 calls annually) over current (1987) levels due to the increase in Reservation population. More traffic across the Reservation due to regional population growth could also increase the demand on Reservation ambulances; this demand is not quantified. The number of ambulance calls in response to traffic accidents are forecasted to increase by 50 percent from 1987 levels to approximately 143 calls annually. These increases in demand would necessitate the addition of an ambulance and crew to maintain adequate coverage. If the pre-October 1987 crew levels have not been restored for existing ambulances (see Chapter 3, Section 3.6.N), this would also have to be done to maintain adequate coverage. In addition, the ambulance service may decide to station ambulances in some outlying communities to decrease response time, rather than housing them all in Lame Deer.

Demand for urgent medical services, which are available to Native Americans and non-Native Americans from Lame Deer IHS clinic, would expand with the increase in population and in Reservation road usage. The number of people treated at the Lame Deer Clinic in response to motor vehicle accidents (estimated to be 100 in fiscal year 1986) would increase by 50 percent in the year 2005 due to Reservation population growth described above. If the increased traffic causes more accidents involving Native Americans, the need for CHS funding would also increase so that treatment for serious injuries could be provided off-Reservation.

Overall, the effects of the High Baseline Alternative on Reservation health care are expected to be severe because of the demand created by a 51 percent increase in Native American population from 1987 to 2005, the importance of these services, and the level of expenditures necessary to meet the demand.

Law Enforcement

Under the High Baseline Alternative, 7.5 additional police officers and 2 police vehicles would be needed by the year 2005. This need would be created by Reservation population growth. However, the demand figures may underestimate the real situation because, in addition to the demand created directly by Reservation population growth, the police may need to respond to more traffic accidents due to increased regional traffic passing through the Reservation; more crime associated with increases in alcohol and drug abuse; more trespassing due to increased regional populations; and more disputes involving Native Americans and non-Native Americans, both on the Reservation and at nearby off-Reservation locations. Increased coverage for outlying areas, such as Birney Village and Ashland Village, would have to be provided. The BIA police respond first to all motor vehicle accidents; the highway patrol is called in only in fatal accidents or when a non-Native American is at fault. The BIA police are responsible for apprehending and holding non-Native Americans as well as Native American offenders. The adoption of the new legal code may also increase future police work.

The already backlogged Tribal Court system (see Chapter 3, Section 3.6.N) would see an increase in cases, particularly those involving credit transactions, business transactions, and alcohol and drug-related offenses, creating additional impacts the Tribe is poorly equipped to deal with. The problems associated with multiple jurisdictions (see Chapter 3, Section 3.6.N) would further complicate the situation, creating difficulty in the court's ability to process cases.

The effect on law enforcement on the Reservation from the High Baseline Alternative is expected to be severe because of the high levels of demand created in an already stressed situation and high levels of expenditures necessary to meet the demand.

Fire Protection

Population growth under the High Baseline Alternative and the coincident potential increase in structural fires may lead to a demand for organized structural fire protection on the Reservation. This demand could mean providing vehicles in each community, and increasing the number and training of volunteer firefighters. With additional traffic on the Reservation, there may be an increase in vehicle fires on the road system or fires adjacent to the roads caused by vehicles. Without an organized structural fire protection program, structural fire protection on the Reservation would continue to be inadequate; any additional demand would only make the situation worse.

Higher recreational use of the Reservation by Native and Non-Native Americans and increased use of the canister sites (where numerous fires have occurred (Feeney, et al., 1986)) could cause more range and forest fires. If a significant increase occurred in the number of fires, the BIA Forestry Program firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these effects is unknown.

Roads

Traffic on the Reservation's major highways would increase at least 7 to 12 percent over current levels by 2005 under the High Baseline Alternative (Table 4-11). One of the rural roads, the Kirby Road, would sustain an increase of 84 percent by 2005. These increases are due to mine construction and operations employees commuting to work across the Reservation. There would be additional traffic due to indirect employees, and Reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to the coal mines and expanded regional business activity would also rise. However, these types of increases are very difficult to quantify. The primary roads (U.S. 212 and MT 39) generally have low sufficiency ratings based on a combination of road conditions, capacity, safety, and other rating characteristics (Feeney, et al., 1986). This is of particular concern to Northern Cheyenne residents because of the large number of loaded school buses that cross the Reservation each day. Increased traffic in the Ashland

TABLE 4-11
INCREASES IN ROAD USE[1] — HIGH BASELINE ALTERNATIVE
Northern Cheyenne Reservation

		1990[3]		1995[3]		2000[3]		2005[3]	
	Current Levels[2]	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%
West Border to Lame Deer (U.S. 212)	1,486	15	1	198	13	183	12	183	12
Lame Deer to East Border (U.S. 212)	1,593	16	1	154	10	152	10	152	10
Lame Deer to North Border (MT 39)	1,075	2	0	95	9	75	7	75	7
Lame Deer to Birney Village	215	0	0	1	0	1	0	1	0
Kirby Road	196	4	2	151	77	164	84	164	84
Ashland Village to Birney Village	200	0	0	12	6	16	8	16	8

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round-trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activities) is not included.
[2] Current levels are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily average figure.
[3] These increases are compared to current levels (see footnote 2).

Source: Feeney, et al., 1986; Montana Department of Highways, 1988; BLM, 1988

Village and Birney Village areas, and increased congestion and accidents in Lame Deer at the U.S. 212/MT 39 intersection, are also a concern to many Reservation residents. Birney Village residents indicate when U.S. 212 between Ashland Village and Lame Deer is blocked or icy, vehicles will detour through Birney Village. Some of the primary roads are currently in poor condition and are scheduled for resurfacing and/or reconstructing in the mid-1990s, subject to future Highway Department priorities and funding availability (Sioux, 1987). Moderate effects on Reservation roads are expected because of the increased traffic. These traffic increases would be accompanied by increases in maintenance costs and accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents.

Recreation

Under the High Baseline Alternative, there would be an increase in usage of recreational facilities on the Reservation. This would occur because of Native American population growth on the Reservation and increased usage of the Reservation by people living off-Reservation. There could also be increases in poaching, littering, trespassing, and conflicts over recreation resources and facility use (Feeney, et al., 1986). Three additional compliance officers, to police recreation areas, would be needed to meet the increase in Reservation use. Moderate impacts to Reservation recreation are expected with the High Baseline Alternative.

Social Services

The natural population growth and Native American inmigration projected under this High Baseline Alternative would place substantial pressure on the already inadequately staffed Reservation social service system which provides services such as child welfare and general assistance. Four and one-half more social workers, in addition to the six currently (1987) needed, would be required to meet the increased population needs of the High Baseline Alternative. If returning Native Americans are unable to find employment and/or if the population growth both on and off the Reservation results in increased stress on families, creating more poverty and abuse situations, the demand for social services could rise at an even higher rate than expected. Effects to social services from the High Baseline Alternative are expected to be severe.

Other Services

Population growth on and off-Reservation as a result of the High Baseline Alternative would lead to increasing pressures on a variety of other services such as care for the elderly and increased use of Dull Knife Memorial College. Most Reservation services are currently experiencing funding shortages so they may find it very difficult to expand services for a rapidly growing population. For example, Dull Knife Memorial College may see an increase in non-Native American students from off-Reservation communities such as Colstrip and Ashland, as well as Native Amer-

ican student increases due to on-Reservation population growth. Dull Knife Memorial College is currently ineligible to receive funding from the state or federal government for the non-Native American students. Thus, any increase in non-Native American students would put additional financial stress on the college. In recent years, 10 to 20 percent of the students who attend Dull Knife have been non-Native Americans, predominantly from Colstrip and Ashland. As these communities grow, it is expected the number of students from these areas would increase. Moderate effects on Dull Knife Memorial College are expected from the High Baseline Alternative.

4.1.7N Social Organization

Community social organization refers to the structures and processes that organize how people in a community relate to one another. The *Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity, outside ties, distribution of resources/power, coordination and cooperation among people in the community, and patterns of personal interaction. These characteristics are used to discuss effects on social organization. Technical Report 6 provides a discussion of how this section was developed.

Under the High Baseline Alternative, moderate effects on social organization would occur on the Northern Cheyenne Reservation because of the following factors: (1) migration of 59 non-Native Americans onto the Reservation (long-term levels would be approximately 10 percent above the 1987 level of 565), (2) return-migration (migration back onto the Reservation by former residents) of 200-250 Native Americans, including potential employees and their families, in search of the benefits of development, (3) coal-related population increases in areas directly adjacent to the Reservation (the population of the Ashland/St. Labre area would increase to 775 by the year 2005 compared to a 1987 population of 513), (4) regional population growth in areas, such as Broadus, Miles City, Sheridan, Colstrip, Forsyth, Hardin, and Billings, that are not directly adjacent to the Reservation, but nevertheless would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for such activities as school, shopping, recreation, (5) approximately 27 Reservation Native Americans (inmigrating and current residents) would obtain direct employment in the coal mine industry and 50 Reservation Native Americans would obtain secondary employment resulting in a annual payroll to Reservation Native Americans of over $1.7 million, and (6) declines in social well-being (Chapter 4, Section 4.1.8N).

Greater contact with non-Native Americans, both on and off-Reservation, and the return-migration of Native Americans who have lived off the Reservation, would increase the diversity of ideas, values and behaviors on the Reservation. More interactions with off-Reservation entities by individuals who work, attend school, recreate, shop, etc., off the Reservation would also occur. These interactions could lead to increased assimilation of the Northern Cheyenne into the White culture.

There may be increased interaction between the Tribal government and county and state government as the Tribal government attempts to provide for increasing service demands. There may also be an increase in feelings of a local lack or loss of control because the decisions regarding coal development are made off-Reservation. This would be coupled with a high rate of natural population growth and return-migration that would stress the Tribal government's ability to operate efficiently.

Conflict among Native American social groups on the Reservation would probably increase. Much of the current conflict among social groups occurs because of the perceived inequality in access to resources such as jobs and income. These conflicts would likely increase because the benefits of relatively high paying employment would be obtained by some individuals, while the negative effects of coal development would be felt by most Reservation residents. In addition, increasing poverty due to population growth may also increase the potential for conflict among groups. There may be a decrease in the ability of the residents to coordinate and cooperate because of conflict over coal development and the uneven distribution of benefits, combined with the stress put on service provision by the rapid population growth on- and off-Reservation. The rising demand for services would necessitate increasing cooperation and coordination to manage change.

Some changes in personal interaction may occur with increased potential for conflicts with non-Native Americans, both on the Reservation and in adjacent communities. For example, existing problems between Native Americans and non-Native Americans in Ashland would probably be exacerbated. Rapid growth is expected in the Ashland area, and Ashland may have difficulty dealing with the growth because it is an unincorporated community without a history of coordinated response to development (BLM, 1984; Mountain West Research — North, 1982). The isolated community of Birney Village is particularly vulnerable to changes in social organization caused by increases in Reservation traffic and non-Native American presence on the Reservation. Increased contact could also result in increased intermarriage which might affect the ability of the Northern Cheyenne to survive as culturally distinct people (NCPO, 1981).

Even with the changes described, it is expected that the Northern Cheyenne sense of Tribal identity would remain strong. However, increasing exposure to non-Native American ideas would cause cultural conflicts that result in problems for some individuals. The feeling of the Reservation being a homeland for the Northern Cheyenne could be somewhat compromised by increasing traffic on the Reservation and the rapid growth of Ashland, directly adjacent to the Reservation. Kinship ties would remain strong (NCPO, 1981) although patterns of sharing would continue to be modified as younger people become more used to the concept predominate in White society that they should be

mainly responsible for supporting their nuclear family (Feeney, et al., 1986). This could weaken the support traditionally provided by the extended family and create increased stress on nuclear families and individuals. The modification of sharing patterns could also result in less communal living, making the conveyance of Northern Cheyenne customs and language more difficult.

High Baseline Alternative coal development would create substantial benefits for the individual Native Americans who obtain employment. Because of traditional sharing patterns, this income may benefit more people than just the families where employment occurs. An increase of 77 jobs is significant to a Tribe with an approximately 50 percent unemployment rate and a 1986 (full-time) employment level of 515. This employment could help the Northern Cheyenne maintain their cultural distinction by allowing them to live on the Reservation while securing employment elsewhere. However, the money earned at the mine would bring increased reliance on a cash economy rather than a barter economy, and increased exposure to other non-Native American values which could indirectly decrease the incidence of communal living and sharing among families.

4.1.8N Social Well-Being

Under the High Baseline Alternative, changes would occur in social well-being due to changes in availability of services and facilities; changes in employment and business activity; stress caused by changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. There would be moderate to severe stress on Reservation facilities and services due to on-Reservation and regional population growth. The demand for housing would force the doubling or tripling of families in existing housing. It is unlikely employment levels would increase as rapidly as population; therefore, unemployment and poverty levels could rise. Increases in stress on individuals associated with changes in cultural conditions and social organization, housing crowding, service/infrastructure shortfalls, and increased availability of illegal drugs in surrounding communities could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Social conflicts and increasing poverty could lead to more crimes against people and property. Increased alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behavior, accidents, and crime. In addition, there is also concern that alcohol and drug abuse affects the ability of Northern Cheyenne people to practice their traditional religion and of parents to teach their children the Cheyenne way.

An increase in social well-being would occur to those who were able to obtain employment or benefit from business expansion as a result of the increased income on the Reservation. Employment in the coal industry and related fields would provide income to those able to obtain jobs. However, there may be so many returning Northern Cheyenne who do not find work that the unemployment rate may be unchanged or rise, and may leave those inmigrants with less income than they had when they previously lived off the Reservation. Return-migrants unable to obtain employment may push up the rate of demand for welfare and other social services. Employment could also cause problems. For instance, the increased availability of money on the Reservation and the strong sharing tradition could increase the opportunity to use alcohol and drugs. It should be noted that the aforementioned housing crowding may not be entirely negative because extended families may live together and as in the past, offer support and share household expenses.

Depression and suicide may rise among the elderly and youth due to rapid social change (NCPO, 1981). A high proportion of the Reservation is very young and at the age in which thrills and risks can be enticing. Social well-being in Ashland Village would be influenced by the rapid population growth in nearby Ashland. This may result in increases in alcoholism and drug abuse and conflicts between Native and non-Native Americans. Changes in the highly traditional, isolated, quiet nature of Birney Village would distress residents and decrease their social well-being.

It is likely that, as a whole, Tribal members would feel less well off after coal development associated with the High Baseline Alternative. Many of the problems they see as most critical (alcohol and drug abuse, inadequate community services, unemployment and poverty, crime, lack of communication among people, family problems (Feeney, et al., 1986; BLM, 1987)) may be exacerbated by increased coal development. Perhaps of greater importance is the likelihood that those Northern Cheyenne who would not be able to take advantage of benefits associated with coal development would feel further deprived of economic equality. This deprivation might be relative, but it would be a very real perception to the people who experienced it. The presence of individuals and families on the Reservation employed in the coal mine industry and the visibility of regional inmigrants to Colstrip, Ashland, Sheridan, and other communities, coupled with the improvement in such services as schools, shopping and recreation facilities in these off-Reservation communities, could increase such feelings of deprivation among those who do not share the benefits.

Severe changes in social well-being are expected with the High Baseline Alternative. (See Technical Report 6 for a discussion of how this section was developed.) See Chapter 4, Section 4.1.9N for related information on effects to culture under the High Baseline Alternative.

4.1.9N Cultural Conditions

Development associated with the High Baseline Alternative would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The Earth Surface Dome would be transformed into something that is spiritually inert and cosmologically dead. This is an intolerable,

irreparable situation according to Cheyenne theology. Spiritual attributes of the environment cannot be reclaimed (Deaver and Tallbull, 1988). Past construction at Colstrip has caused spirits from that area to vacate the location.

Terrain alterations associated with Montco mine development would disturb the Ashland and Birney Villagers' relationship to their environmental setting. Some of the elders in Birney Village feel that they would be forced to abandon their life-long homes because of this disturbance. Further, the increased noise and traffic associated with the development of Montco would disturb the isolation and seclusion necessary for current ceremonial activities, including fasting.

Terrain alterations would also disturb the relationship between the Holy Lodge in Birney Village (Lodge of the Sacred Hat) and its environmental setting. It has a relationship to the East which would be disturbed. The spirits in the hills east of Birney Village would be destroyed and could not be restored.

The change in the distribution of prairie falcons, red-tailed hawks, and golden eagles would affect the distribution of mediators between Cheyenne and the Spirit Beings in the Blue-Sky space. It might also modify their availability for use as cancer medicines (falcons and hawks) and for ritual purposes (eagle feathers). Modifications of antelope and deer density might also have cultural effects since body parts of both of these species have significant uses in current religious practices.

The development of the proposed CX Ranch mine, Montco mine, Greenleaf-Miller mine, and Wolf Mountain mine, along with the construction of the Tongue River Railroad would destroy springs, causing irreparable damage to the spirits associated with the destroyed springs. It would result in the destruction of archaeological properties with ethnic significance and desecration of sites with spiritual attributes; e.g., burials, old Sun Dance locales, rock art sites and fasting sites (prehistoric and modern) and, potentially, sources of earth paint necessary for the Sun Dance/New Life Lodge, a central and indispensable ceremony in Cheyenne religion which renews the earth. Known sites with sacred attributes include two rock art sites, currently used for ceremonial purposes, located in the proposed Montco buffer zone and piercing grounds in the proposed Greenleaf-Miller mine area. The rock art sites would be negatively affected by increased human traffic, noise, and air pollution. Privacy and seclusion are necessary for current ceremonial use of these sites. This is also true of Deer Medicine Rocks approximately 6 miles north of Lame Deer. Increasing vandalism with a rise in human traffic in the area may be a particular problem with this site since it is so spectacular, relatively well known, and visible from the road between Lame Deer and Colstrip. Pollution from the High Baseline projects would pollute the atmosphere in a spiritual and physical sense. Blocking the sun's rays would upset the balance of spirituality and substance/matter.

The construction of the Tongue River Railroad would change the environmental setting adjacent to the Tongue River; this would change the spiritual attributes of the area and hence change the people's spiritual and physical relationship to the river. Anytime there is construction activity, the noise, underground disturbance, and disturbance of vegetation damages the interrelationships among the spiritual aspects of the physical setting and the people associated with it. This disturbance may cause the spirits to abandon the area. If the spirits leave in a bad way, the Northern Cheyenne would suffer. This is particularly relevant for the residents of Ashland Village, and to a lesser extent, Birney Village.

Some Northern Cheyenne feel that their ethnic identity is threatened by the continuing development of off-Reservation coal mining. The perception is that the Reservation is being encircled by the existing developments at Colstrip, Decker, and Spring Creek, and the proposed developments at Greenleaf-Miller to the North, Montco to the East, and Wolf Mountain, CX Ranch to the south. Anxiety levels are extremely high because many Northern Cheyenne believe that it is just a matter of time before the mines expand onto the Reservation. From the Northern Cheyenne point of view, this would destroy the Reservation and, hence, the Northern Cheyenne as a people. The threat to the Reservation and Northern Cheyenne ethnic identity is perceived by traditionalists and non-traditionalists.

The Northern Cheyenne feel that a series of problems are automatically associated with continued coal development in southeastern Montana. This results in widespread anxiety which affects people's self-perceptions and relationships with their families and other members of their communities. The Northern Cheyenne fear becoming a minority on their own Reservation, loss of their language (which many equate with loss of their culture), and a wide array of social problems associated with increasing population density and increasing contacts with the dominant society. These social problems include (1) Northern Cheyenne increasingly becoming targets of discrimination, (2) children coming under increased stress and being unable to develop a proper respect for the spiritual and physical aspects of the environment because they would not be able to grow up in a peaceful, secluded environmental setting, (3) increasing alcoholism and drug abuse, (4) loss of privacy and seclusion due to increased traffic, and (5) an increase in crime. Members of Ashland Village have already noted a change in children's lifestyles and attitudes and have reported an increase in racial tension on both sides just as a result of the development at Colstrip.

Effects to cultural conditions are expected to be severe under the High Baseline Alternative.

4.1.1C Employment

Development associated with the High Baseline Alternative would employ some residents of the Crow Reservation. The change in employment under the High Baseline Alternative in 2005 represents less than a 2 percent change from the 1986 full-time equivalent employment level of 752. Primarily because of the distance between the Crow Reservation and the High Baseline mines, the Crow share of Native American employment is expected to be smaller than that of the Northern Cheyenne. Employment on the Crow Reservation from High Baseline projects is projected to be 5 direct operations workers and eight secondary workers in 2005. Of these workers, two operations workers are projected to be nonlocal, non-Native American workers, while all other workers are projected to be local Native Americans. Employment would begin in 1995 with nine local and two nonlocal workers residing on the Crow Reservation.

4.1.2C Population

The population on the Crow Reservation would increase significantly from 1987 to 2005. This increase would be primarily due to the natural increase (births minus deaths) on the Reservation. A forecasted lack of return-migration and the small number of High Baseline Alternative project employees would not significantly add to the population growth on the Reservation. Table 4-12 shows population estimates through 2005 for the Crow Reservation under the High Baseline Alternative.

TABLE 4-12
PROJECTED POPULATION
HIGH BASELINE ALTERNATIVE
Crow Reservation

Year	Native American	Non-Native American	Total	Percentage Increase Over 1987
1987	5,826	1,837	7,663	0
1990	6,074	1,837	7,911	3
1995	6,511	1,843	8,354	9
2000	6,980	1,843	8,823	15
2005	7,483	1,843	9,326	22

Source: BLM, 1988

The natural population growth rate (births minus deaths) of Native Americans on the Crow Reservation has historically been high when compared to the natural increase of the total regional population. This growth is expected to continue at a slower rate than in the past because of increased efforts by on-Reservation individuals to moderate family size. It is estimated that by 2005, the total population of the Crow Reservation will be 9,300. Of this total, approximately 7,500 people will be Native Americans. Under the High Baseline Alternative, the non-Native American population is expected to remain stable through 2005.

Return-migration would not occur because the majority of Crow Tribal members live on the Reservation or in nearby off-Reservation communities such as Hardin and Billings. In addition, many Crow Tribal members who reside off the Reservation are employed and are not expected to return to the Reservation unless they can be assured of a higher paying job.

As discussed in Chapter 4, Section 4.1.1C, the number of Native Americans that are expected to be employed at High Baseline Alternative projects is limited. In addition, those nonlocal, non-Native American workers employed in High Baseline Alternative projects are less likely to settle on the Crow Reservation because of distance from the projects, the shortage of available housing on the Reservation, and the proximity of large communities (Billings and Sheridan) relatively close to the Reservation which offers an alternative to settlement on the Reservation. Therefore, only small population changes are projected for the Crow Reservation from development of the High Baseline Alternative.

The nearby off-Reservation communities of Hardin and Sheridan are expected to see significant population growth from development of High Baseline Alternative projects. Table 4-13 shows the expected population changes to Hardin and Sheridan under the High Baseline Alternative. These increases are not expected to have significant economic affects on the Crow Reservation, but they are expected to effect social organization, social well-being and services on the Reservation. For a discussion of these effects, see Chapter 4, Sections 4.1.6 to 4.1.8.

TABLE 4-13
POPULATION CHANGE[1] — COMMUNITIES
ADJACENT TO CROW RESERVATION
HIGH BASELINE ALTERNATIVE

	1990	1995	2000	2005
Hardin	55	180	271	365
Sheridan	1,077	3,399	5,654	7,988

[1]Changes measured against 1987 and includes natural increase for each community.

Source: BLM, 1988

4.1.3C Income

Household income on the Crow Reservation is expected to increase only slightly as a result of employment of Reservation residents under the High Baseline Alternative. In 2005, household income on the Crow Reservation is forecasted to be $485,000 over the 1986 level, a 1.3 percent increase due to the High Baseline Alternative. This change in household income on the Crow Reservation represents less than 1 percent of the total change in household income for the Montana portion of the Powder River Region.

Increases in household income on the Crow Reservation would not proportionally increase Reservation business activity. Reservation business activity in the year 2005 is forecasted to increase by $141,000 over the 1986 level. This represents less than a 1 percent change in Reservation business activity. This indicates a weak link between the Reservation economy and the economy of the rest of the Montana portion of the Powder River Region. A substantial portion of the household income on the Reservation is spent off the Reservation. Those funds that are spent on the Reservation do not circulate long before flowing off the Reservation. Therefore, off-Reservation development does not have a large effect upon Reservation business activity. Technical Report 1 provides a description of the input/output model used to forecast these changes in economic activity on the Crow Reservation.

The less than 1 percent change in household income and business volume on the Crow Reservation would not significantly affect the economy of the Reservation. It can be expected that large scale regional development could lead to increased price levels. The large number of unknowns involved in forecasting future price levels precludes an accurate, quantitative assessment. Therefore, a forecast of specific price levels was not made. However, based upon studies of development in the past (Feeney, et al., 1986), some evidence indicates that price levels do increase with large regional developments. While the level of price increase is difficult to forecast, it is likely that there would be an increase in price level on the Crow Reservation due to off-Reservation coal development. As prices rise, those households on fixed incomes or whose income does not keep up with increasing price levels would experience a decline in purchasing power. More Reservation residents are likely to see declines in their standard of living relative to the rest of the region because fewer Reservation residents are expected to be able to take advantage of employment opportunities related to coal development. Given the distance of the Crow Reservation from High Baseline development and the proximity of the Reservation to trade centers, such as Billings and Sheridan, the upward pressure on prices is expected to be moderate. However, upward pressure on prices is expected to be mild as the development of projects in the High Baseline Alternative move into the operations phase, and employment in the region stabilizes.

4.1.4C Tribal Fiscal Conditions

Revenue

Development of High Baseline Alternative projects would not affect revenues to the Crow Tribe. The primary revenue sources of the Tribe are fees from livestock grazing, agricultural lease fees, coal revenues, and federal grants and contracts. The Tribe does not tax persons, income or property on the Reservation, so any increases in population and income on the Reservation do not lead to an increase in Tribal revenue. Other sources of revenue for Reservation projects and programs have disappeared because grant money for specific projects from federal sources has declined in the recent past.

Expenditures

Increases in demand for services would require an increase in expenditures. For a discussion of service demands see chapter 4, Section 4.1.6C.

In conclusion, the development of High Baseline Alternative projects would have no significant effect on the current level of Tribal revenues, while needed increases in expenditures from population growth due to the High Baseline Alternative are expected over the long term.

4.1.5C Tribal Government

The development of projects in the High Baseline Alternative would have little effect on the Crow Tribal government because of the distance of the Reservation from the projects contained in the High Baseline Alternative and the resulting small changes in 1987 levels of population, employment, and income from these projects. However, population growth on Reservation and off Reservation would increase the pressure on Tribal government to provide for higher levels of service demands and to deal with problems concerning Crow Tribal members in communities surrounding the Reservation.

4.1.6C Housing, Services, Infrastructure

This section describes the expected future conditions of housing, services, and infrastructure on the Crow Reservation due to population growth associated with the High Baseline Alternative, including natural population increase. Natural population increase (births minus deaths) is high among Native Americans on the Crow Reservation. Between 1987 and 2005, Native American population on the Reservation is projected to increase 28 percent. Population increases due to High Baseline Alternative projects are projected to be insignificant (less than 1 percent for Native Americans and non-Native Americans). However, the Crow Reservation would be affected by growth in communities adjacent to the Reservation and by increased traffic across the Reservation

caused by projects in the High Baseline Alternative. A high level of concern was expressed at the Crow Scoping Meeting (BLM, 1987) and at individual interviews on the Crow Reservation, regarding the possible effects to Reservation services from regional coal development.

The increased service demands and the associated increased expenditures and annual operating costs expected on the Crow Reservation as a result of the High Baseline Alternative are discussed in the remainder of this section. Natural population growth accounts for most of the increase in Native American service demands under the High Baseline Alternative, while the increase in service demands by the non-Native American population is created by the High Baseline Alternative coal projects. Native American and non-Native American services are discussed separately in cases where service provision does not apply equally to both groups. The service-demand estimates and associated cost estimates are based on changes over and above 1987 levels and represent providing adequate service to that increment of population change resulting from the High Baseline Alternative. The service demand values are calculated using regional service-demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. These are both described in Technical Report 3.

Coal mine and railroad construction is projected to begin in 1990 and continue until 1996. Full production at all mines and, consequently, maximum effects to services and infrastructure would occur in 1999 and continue for approximately 40 years.

Housing

Housing demand would be very high under the High Baseline Alternative; 331 additional units that could house families would be needed by 2005 to accommodate the population growth projected to occur between 1987 and 2005. It is unlikely the current (1987) deficiency of 721 units would be met by 2005, much less the provision of 331 additional units. In addition, population growth in the off-Reservation community of Hardin due to natural increase and High Baseline projects (expected to rise 10 percent over 1987 figures by 2005), could increase the demand for rental housing in the Hardin area. If rental housing prices increase there, some Native Americans currently living in the Hardin area may be forced to return to the Crow Reservation to reside with family and/or friends. Currently (1987), there is excess housing for both rent and purchase in Hardin, but not enough to provide housing for the projected population increase under the High Baseline Alternative.

Effects on Reservation housing are expected to be severe because of the high level of demand generated by natural population increase (Native American population is projected to increase 28 percent between 1987 and 2005) and the possibility of people relocating from Hardin to the Reservation because of changes in rental housing availability and cost in Hardin. This would increase the incidence of crowded housing and adversely affect the current (1987) inadequate housing conditions. The expenditures necessary to meet the High Baseline demand for housing in 2005 would total $21,515,000 (1985 dollars) for capital expenditures.

Water, Sewer, and Solid Waste

There would be no significant effect to water, sewer, or solid waste services on the Crow Reservation from any of the leasing alternatives. Therefore, these services are not discussed under the High Baseline.

Education

Schools located on the Reservation are not discussed because no effects are expected from any of the three leasing alternatives. However, Hardin schools, which are attended by a large number of Reservation students, would be affected by the implementation of the leasing alternatives and, therefore, are discussed under the High Baseline Alternative. Of the additional 530 students estimated to reside on the Reservation in 2005 with High Baseline conditions, 198 or 37 percent of these students would attend Hardin elementary and secondary schools. By 2005, 92 additional students would attend Hardin schools due to natural increase in the Hardin area. In addition, approximately 14 students (by the year 2005) from outside the Hardin area are expected to attend Hardin schools because of regional coal development. These 304 students represent an increase of 24 percent over 1987 and would necessitate an additional 17 teachers and 34,000 square feet of school space at the elementary and secondary schools by the year 2005. Problems at these schools, such as the high Native American student dropout rate, interracial conflict, lack of Crow culture and language programs, lack of Native American teachers to act as role models, and lack of intercultural programs to promote understanding between the different cultures are expected to continue under the High Baseline Alternative. Mild to moderate effects on the education of Reservation students who attend Hardin schools are expected due to the sizeable increase in total numbers of students at Hardin schools (24 percent over 1987 levels by 2005) and the problems cited above.

Health Care

Health care needs generated by the High Baseline Alternative include 1.5 doctors, 1 physician's assistant, 1 dentist, and 3.5 outpatient nurses by the year 2005. By 2005, an additional seven hospital beds would be needed to meet Crow Reservation Native American demand, as well as eight beds to meet Northern Cheyenne Reservation Native American demand. Half of these beds would be needed at Crow Agency Hospital and half at regional hospitals. (See Technical Report 3.) Pressure may also be placed on Crow Agency Hospital outpatient services to handle outpatient overflow from the Lame Deer Clinic due to population increase on the Northern Cheyenne Reservation. Additional CHS funding from IHS would have to be made available so Native Americans could receive health care off-Reservation that is not available through the hospital.

The need for this type of funding would decrease if the proposed hospital is completed on the Reservation.

Demand for alcohol and drug abuse treatment services would increase due to Reservation and regional population growth. The rise in alcohol and drug abuse would not only generate a higher demand for addiction treatment, but would also be associated with increases in alcohol-related diseases, accidents, suicides, and other violent behavior, all of which would increase health care service demands.

No medical services are currently available to non-Native Americans on the Reservation except for emergency care and ambulance service. That situation would continue under the High Baseline Alternative.

Under the High Baseline Alternative, increased demands would be placed on the ambulance service due to increasing Reservation population growth and additional traffic across the Reservation. These demands may necessitate an additional ambulance and/or ambulance crews to maintain adequate coverage. Demand for emergency medical services, which are available to Native Americans and non-Native Americans from the Crow Agency Hospital, would also expand with the increased population and Reservation road usage. The number of people treated by the Crow Agency Hospital in response to motor vehicle accidents would increase by at least 28 percent between 1987 and 2005. If the traffic increase causes more accidents involving Native Americans, the need for CHS funding would increase so that care for injuries too serious to be treated at Crow Agency Hospital could be provided off-Reservation.

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned at the Crow Scoping Meeting and in individual interviews on the Reservation. Overall, the effect on Reservation health care is expected to be severe because of the high levels of demand created in an already stressed situation. A 28 percent increase is expected in Crow Reservation Native American population and a 51 percent increase in Northern Cheyenne Reservation Native American population between 1987 and 2005. The level of expenditures required to provide adequate service for Crow Reservation residents in 2005 would be capital expenditures of $716,000 (1985 dollars) for Crow Agency hospital beds, and operating expenditures of $1,078,000 annually (1985 dollars) for the hospital, CHS funds and ambulance services. Expenditures for alcohol and drug abuse services are not included in the estimate.

Law Enforcement

Under the High Baseline, 5.5 additional police officers and 2 police vehicles would be needed by the year 2005. This need would be created by Reservation population growth. In addition to the demand created directly by Reservation population growth, the police may need to respond to more traffic accidents due to increased Reservation traffic; more crime associated with increases in alcohol and drug abuse; more trespassing due to increased regional populations; and more disputes involving Native Americans and non-Native Americans. The Tribal Court system would see an increase in cases, particularly those involving credit transactions, business transactions, and alcohol and drug-related offenses. The problems associated with multiple legal jurisdictions (Chapter 3, Section 3.6.N) would further complicate the situation. Problems with law enforcement and multiple jurisdictions are of particular concern to Reservation members and were mentioned frequently at the scoping meeting and during individual interviews on the Reservation.

The effect on law enforcement on the Reservation from the High Baseline Alternative is expected to be severe because of the high levels of demand created in an already stressed situation. Annual expenditures needed to meet these demands for law enforcement officers would be capital costs of $98,000, and annual operating costs of $121,000. Both figures are in 1985 dollars.

Fire Protection

The increase in automobile traffic, and possible increases in coal train traffic and trespass on the Reservation, could cause more range and forest fires. If a significant increase occurred in the number of fires, firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these effects is unknown.

Roads and Railroads

Under the High Baseline Alternative traffic on I-90, between the northern border of the Reservation and the junction with U.S. 212, would rise 5 percent between 1985 and 2005 due to increased commuter traffic to the new mines. Traffic on U.S. 212 would rise 21 percent during the same time period. These estimates are for direct mine construction and operations commuter traffic only; they do not include changes that would occur because of regional and Reservation population growth such as commuter traffic for indirect employees, commercial truck traffic due to coal mines, increased regional business activity, and travel for shopping, school, and recreation. There are plans to reconstruct part of U.S. 212 west of Busby starting in 1990, subject to future Highway Department priorities and funding availability (Montana Department of Highways, 1988).

Concern about Reservation roads, particularly truck traffic increases, was expressed at the Crow Scoping Meeting and frequently during individual interviews on the Reservation. Moderate effects on Reservation roads are expected due to the increased traffic and because part of U.S. 212 is currently (1987) in need of repair. These traffic increases would be accompanied by increases in maintenance costs and accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents.

Increases in rail traffic over existing rail lines could cause more accidents and fires along rail beds. Changes in rail traffic due to hauling coal are dependent upon where the coal is being transported. Because of the difficulty in predicting the location of future coal purchases, the level of significance of these effects is unknown.

Recreation

Under the High Baseline Alternative, use of recreational facilities on the Reservation would increase because of Native American population growth on the Reservation and increased usage of the Reservation by people living off-Reservation. There could also be increases in poaching, littering, trespassing, and conflicts over recreation resources and facility use. Mild effects to Reservation recreation are expected from the High Baseline Alternative.

Social Services

Natural population growth projected under this High Baseline Alternative would require the addition of 4.5 social workers by 2005. If the increases in population both on and off the Reservation result in more alcoholism, drug abuse, and stress on families (creating loss of employment and family violence situations), the demand for social services could increase at an even higher rate than expected. This effect would be moderate given the size of the estimated Reservation Native American population increase (28 percent between 1987 and 2005). Expenditures necessary to meet High Baseline demands would be operating costs of $99,000 annually for additional social workers (1985 dollars).

Other Services

Increases in on and/or off-Reservation population as a result of the High Baseline Alternative would create more pressures on a variety of other services such as care for the elderly and the Little Big Horn Community College. Most Reservation services are currently experiencing funding shortages, so they may find it very difficult to expand services for a rapidly growing population. For example, Little Big Horn Community College may see an increase in non-Native American students from off-Reservation communities such as Hardin, but would receive no funding from the state or federal government for these students. Mild effects on Little Big Horn College from the High Baseline Alternative are expected because Reservation and regional population growth.

4.1.7C Social Organization

Community social organization refers to the structures and processes that organize how people in a community relate to one another. The *Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity, outside ties, distribution of resources/power, coordination and cooperation among people in the community, and patterns of personal interaction. These characteristics are used to discuss effects on social organization. Technical Report 6 provides a discussion of how this section was developed.

Social organization on the Crow Reservation under the High Baseline Alternative, would be affected by the following factors: (1) coal-related population increases in areas adjacent to the Reservation (e.g., the population of Hardin and Sheridan, would increase by approximately 10 percent and 46 percent, respectively, above 1987 levels by 2005), (2) approximately 11 Reservation Native Americans would obtain direct and indirect employment resulting in an annual payroll to Reservation Native Americans of over $233,150 starting in 1999, (3) regional population growth in areas, such as Miles City, Colstrip, Forsyth, Ashland, and Billings, that are not directly adjacent to the Reservation, but nevertheless would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for activities such as school, recreation, shopping, and (4) declines in social well-being (see Chapter 4, Section 4.1.8C). Overall, mild changes to Crow Reservation social organization are expected under the High Baseline Alternative.

Greater contact with non-Native Americans would increase the diversity of ideas, values, and behaviors on the Reservation. These contacts could also heighten conflicts between Native Americans and non-Native Americans in schools and recreation settings, for example, and cause more individual negative behaviors among Native Americans, such as alcohol and drug abuse. Although Tribal identity is expected to remain strong, increasing exposure to non-Crow ideas could cause cultural conflicts that result in problems for some individuals. Already existing conflicts among Crow groups on the Reservation may be exacerbated by the declines in social well-being and by development, making it harder to achieve coordination and cooperation among Tribal members.

Changes in the importance of kinship ties and sharing patterns may be slightly accelerated with increased exposure to White society, resulting in less importance being tied to these values. However, these sharing patterns would still act, to some degree, to redistribute the income received by individuals who obtain employment to a greater number of people.

4.1.8C Social Well-Being

Under the High Baseline Alternative, changes would occur in social well-being due to changes in availability of services and facilities; changes in employment and business activity; changes in cultural conditions; stress caused by changes in Reservation social organization and increases in social conflicts; changes in access to resources; and changes in perceptions. Reservation facilities and services would be mildly to severely stressed due to on-Reservation population growth. Employment levels would not increase as rapidly as population, therefore unemployment and poverty levels would rise. The demand for housing would force the doubling or tripling of families in existing dwellings. Greater stress on individuals associated with changes in cultural conditions and social organization, housing crowding, service/infrastructure shortfalls, and increased availability of drugs could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Social

conflicts, increased poverty, and the perception that the Crow would not share in the benefits of coal development could lead to more crimes against people and property. Increased alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. There is also concern that alcoholism and drug abuse make it difficult to practice the traditional culture. In addition, access to alcohol and drugs could increase with population growth in adjacent communities, such as Sheridan and Hardin. Moderate changes in social well-being are expected under the High Baseline Alternative. (See Technical Report 6 for a discussion of how this section was developed.) See Chapter 4, Section 4.1.9C for related information on effects to culture under the High Baseline Alternative.

4.1.9C Cultural Conditions

Effects from development of the proposed mines and railroad in the High Baseline Alternatives along with continuation of existing mines would result in changes to the *baxpe* qualities of the environment; it is not clear what exactly happens to the spiritual aspects of the altered terrain. The landscape would be modified causing a reduction in its beauty and changing the distribution of plant and animal species which provide the Crow with a major source of inspiration and knowledge. Some traditionalist Crow regard reclamation as respectful behavior toward the Earth Clan, but others do not (Deaver, 1988). Some of the high places in the Wolf Mountains that the Crow use for fasting, making offerings, and communicating with the Without Fires would be disturbed by air pollution, noise and increased human traffic. The privacy and seclusion of the area would be reduced.

Changes in the distribution of eagles, hawks, and falcons ("those that whistle") would modify the Crow's access to feathers of these species, which are important ritual items. This change in distribution and, hence, access to these species, may reduce access to particular ritual items or may require change in acquisition patterns; e.g., seeking out new collecting areas.

Other effects of the High Baseline Alternative include potential damage to archaeological sites with *baxpe* attributes and/or ethnic significance. Site types of particular concern are burials, fasting sites (prehistoric, historic, and modern), rock art sites, Sun Dance localities, sweat lodges, offering sites, Medicine Wheels, and tipi ring sites. The Spring Creek and Absaloka mine areas are the most archaeologically sensitive for the Crow (Medicine Crow, 1987).

Continuing coal development in southeastern Montana would increase the regional non-Native American population density and reduce the physical and social isolation of the Crow. Traditionalists among the Crow see this as a negative effect because this would limit their ability to withdraw both socially and physically in order to conduct religious ceremonies requiring privacy. In addition, on the basis of past experience with development projects such as Yellowtail Dam, they assume it would bring with it a host of social problems: increasing discrimination and prejudice, crime, more traffic and traffic accidents, increased vandalism to cultural sites, loss of isolation for private ceremonial activities and an increase in jurisdictional disputes among various levels of government (county, state, federal, Tribal). In general, children would be introduced to many undesirable things. Increasing contact with the dominant society is particularly feared in terms of language loss. Crow values and beliefs are embedded in the Crow language, and traditionalists regard the ability to speak Crow as critical to their beliefs and ethnic identity. Increasing non-Native American population density could put more pressure on schools to not teach Crow and could deemphasize nativist values. This would have a negative effect on the Crow's ability to pass on their culture to their children.

Effects to Crow cultural conditions are expected to be moderate under the High Baseline Alternative.

4.2 IMPACTS OF LEASING ALTERNATIVES

This portion of Chapter 4 describes the impacts to the Northern Cheyenne and Crow Tribes from the three Round I federal coal Leasing Alternatives 2A, 2B, and 4. The Northern Cheyenne analysis is presented in Sections 4.2.1N through 4.2.10N. It is followed by that for the Crow (Sections 4.2.1C to 4.2.10C). Impacts to the Crow from Powder River I leasing are generally less than those to the Northern Cheyenne. This is primarily the result of the much greater distance from the Crow Reservation to the new mine tracts. Consequently, the discussion of Crow impacts in this Supplement is generally less extensive than that for the Northern Cheyenne. Figure 4-1 in this section shows the Northern Cheyenne Reservation.

This chapter uses the High Baseline Alternative (described in the previous section) as the region's baseline energy future. Any "change" in figures presented in the following tables in the remainder of Chapter 4 represent changes over the High Baseline Alternative unless otherwise noted. (Note: Chapter 4A uses the Low Baseline Alternative as the region's baseline energy future.) The federal coal tracts contained in each of the three leasing alternatives are shown in Table 4-14 along with their associated tonnages, start dates, and employment levels. The map packet at the end of this Supplement contains large, fold-out maps that show each of the three leasing alternatives. Map 3 shows the location of the tracts contained in Leasing Alternative 2A; Maps 4 and 5 show Leasing Alternatives 2B and 4, respectively.

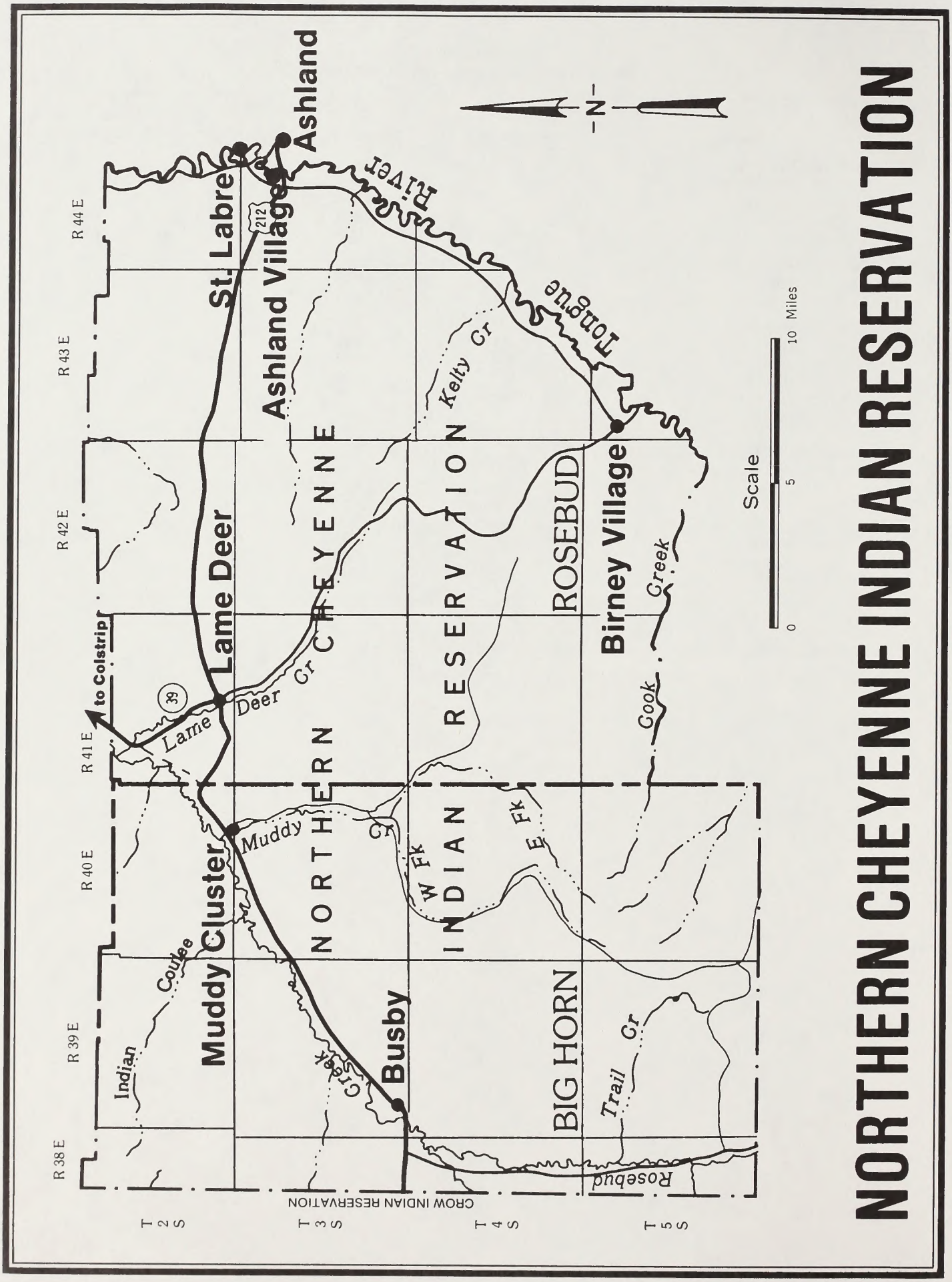
TABLE 4-14
TRACT INFORMATION — BY ALTERNATIVE

Tracts	Assumed Annual Production[1]	Assumed Start Dates		Direct Peak Employment[2]
		Construction	Operations	
NEW MINE TRACTS				
Leasing Alternative 2A:				
Cook Mountain	6.4	1994	1996	212
Coal Creek	4.1	1996	1998	136
Northwest Otter Creek	10.3	1998	2000	341
Leasing Alternative 2B:				
Coal Creek	4.1	1996	1998	136
Northwest Otter Creek	10.3	1998	2000	341
Leasing Alternative 4:				
Coal Creek	4.1	1996	1998	136
Cook Mountain	6.4	1994	1996	212
Ashland (Decker-Birney)	9.1	1999	2001	305
Northwest Otter Creek	10.3	1998	2000	341
Southwest Otter Creek	10.0	1998	2000	334
EXPANSION/EXTENSION TRACTS[3]				
Leasing Alternatives 2A, 2B, and 4:				
Colstrip A&B		Currently being mined		No change
Colstrip C		Currently being mined		No change
Colstrip D		1988	1988	No change
North Decker		1998	1999	No change
Spring Creek		1999	2000	No change
West Decker		1996	1997	No change

[1]Millions of tons per year
[2]Would occur during operations phase
[3]The six expansion/extension tracts are included in all three leasing alternatives

Source: Company estimates; BLM, 1988

Figure 4-1


NORTHERN CHEYENNE INDIAN RESERVATION
N
Scale
0
5
10 Miles
Ashland
St. Labre
Ashland Village
Tongue River
Kelty Cr
Lame Deer
to Colstrip
39
Lame Deer Cr
CHEYENNE
NORTHERN
INDIAN
RESERVATION
ROSEBUD
Birney Village
Cook Creek
Muddy Cluster
Muddy Cr
W Fk
E Fk
Busby
Coulee
Indian Creek
BIG HORN
Trail Cr
Rosebud
CROW INDIAN RESERVATION
R 38 E
R 39 E
R 40 E
R 41 E
R 42 E
R 43 E
R 44 E
T 2 S
T 3 S
T 4 S
T 5 S

4.2.1N Employment

Employment on the Northern Cheyenne Reservation would increase under each of the three leasing alternatives. The total direct employment level of workers on these tracts forecasted to reside on the Northern Cheyenne Reservation is shown in Table 4-15 for Leasing Alternatives 2A, 2B, and 4. For example, a total of 9 Native Americans and 10 non-Native Americans residing on the Reservation are forecasted to be employed in construction in 1995 with Leasing Alternative 2A; in the year 2000, total construction employment would increase to 7 Native Americans and 17 non-Native Americans.

In addition to direct employment, the development of each of the three leasing alternatives would lead to indirect employment within the Montana portion of the Powder River Region. While jobs associated with direct employment from each of the three leasing alternatives would occur in the off-Reservation federal coal tracts, indirect jobs associated with these projects could occur either on or off-Reservation and would be associated mainly with the retail trade, construction, and service sectors. Table 4-16 shows changes in indirect, direct, and total forecasted employment levels resulting from Leasing Alternatives 2A, 2B, and 4 (for those workers residing on the Reservation). For example, estimated employment of those indirect workers residing on the Reservation in 1995 would be four Native Americans and one non-Native American. Indirect employment would increase until 2005 when it stabilizes at 48 Native Americans and 20 non-Native Americans employed in jobs which are indirectly related to developments from Leasing Alternative 2A.

Northern Cheyenne Reservation employment would increase significantly for each of the Leasing Alternatives under the High Baseline Alternative. For the year 2005, Leasing Alternative 4 shows the largest increase at 30 percent, while Leasing Alternative 2B has the smallest increase at 16 percent.

4.2.2N Population

Population levels on the Northern Cheyenne Reservation would increase under each of the three leasing alternatives. Leasing Alternative 4 is expected to create the greatest total population growth on the Reservation and 2B, the least. Table 4-17 shows the forecasted Reservation population from 1987 to 2005 for Leasing Alternatives 2A, 2B, and 4.

TABLE 4-15
CHANGES IN DIRECT EMPLOYMENT[1] — EMPLOYEES RESIDING ON RESERVATION
Northern Cheyenne Reservation

	Construction		Operation		Total	
Year	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
			LEASING ALTERNATIVE 2A			
1990	0	0	0	0	0	0
1995	9	10	0	0	9	10
2000	7	17	17	12	24	29
2005	0	0	20	21	20	21
			LEASING ALTERNATIVE 2B			
1990	0	0	0	0	0	0
1995	0	0	0	0	0	0
2000	7	19	10	7	17	26
2005	0	0	20	21	20	21
			LEASING ALTERNATIVE 4			
1990	0	0	0	0	0	0
1995	9	10	0	0	9	10
2000	17	25	19	9	36	34
2005	0	0	34	28	34	28

[1] Changes measured against High Baseline Alternative. Employment of Reservation residents, jobs would occur off-Reservation at mine sites.

Source: BLM, 1988

TABLE 4-16
EMPLOYMENT OF RESERVATION RESIDENTS[1]
Northern Cheyenne Reservation

Year	Changes Over High Baseline						Total [2] Employment	High Baseline Total
	Indirect		Direct		Totals			
	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American		
				LEASING ALTERNATIVE 2A				
1990	0	0	0	0	0	0	475	475
1995	4	1	9	10	13	11	585	561
2000	27	13	24	29	51	42	659	566
2005	48	20	20	21	68	41	675	566
				LEASING ALTERNATIVE 2B				
1990	0	0	0	0	0	0	475	475
1995	0	0	0	0	0	0	561	561
2000	21	10	17	26	38	36	640	566
2005	36	15	20	21	56	36	658	566
				LEASING ALTERNATIVE 4				
1990	0	0	0	0	0	0	475	475
1995	24	1	9	10	13	11	585	561
2000	41	11	36	34	77	45	688	566
2005	83	23	34	28	117	51	734	566

[1] Employment of Reservation residents. Indirect jobs could occur either on or off-Reservation, direct jobs would occur off-Reservation at mine sites. Direct jobs include construction and operations employment.
[2] Includes High Baseline and leasing alternative employment and represents the cumulative employment impact.

Source: BLM, 1988

TABLE 4-17
TOTAL POPULATION
Northern Cheyenne Reservation

Year	Native American	Non-Native American	Total[1]	High Baseline	Percentage Increase Over High Baseline
		LEASING ALTERNATIVE 2A			
1987	3,806	565	4,371	4,371	0
1990	4,074	568	4,642	4,642	0
1995	4,807	649	5,456	5,435	0
2000	5,644	703	6,347	5,920	7
2005	6,145	725	6,870	6,384	8
		LEASING ALTERNATIVE 2B			
1987	3,806	565	4,371	4,371	0
1990	4,074	568	4,642	4,642	0
1995	4,804	631	5,435	5,435	0
2000	5,632	694	6,326	5,920	7
2005	6,133	720	6,853	6,384	7
		LEASING ALTERNATIVE 4			
1987	3,806	565	4,371	4,371	0
1990	4,074	568	4,642	4,642	0
1995	4,807	649	5,456	5,435	0
2000	5,682	703	6,385	5,920	8
2005	6,272	735	7,007	6,384	10

[1]The sum of High Baseline and leasing alternative population which represents the cumulative population impact.

Source: BLM, 1988

The majority of the development-related Native American population increase under each of the three leasing alternatives is due to the return of Native Americans who now live off the Reservation. These Native Americans would move to the Reservation in search of the benefits of regional development. The number of Native Americans returning in search of employment under Leasing Alternatives 2A and 2B are forecasted between 200 to 250, and under Leasing Alternative 4, between 250 and 300 Native Americans. This represents approximately 15 percent of the Northern Cheyenne projected to be living off-Reservation at the time Leasing Alternatives 2A and 2B are developed, and 18 percent for Leasing Alternative 4. (See Technical Report 2.)

The communities of Lame Deer and Ashland Village (Figure 4-1 and Map 3) are expected to experience the greatest population gains under all three leasing alternatives. Tables 4-18, 4-19, and 4-20 show forecasted community-specific population changes from 1990 to 2005 for Leasing Alternatives 2A, 2B, and 4, respectively. These numbers represent the change in population associated with either direct or indirect employment opportunities only. Natural increase in the Reservation population is not included in the community-specific population totals. Determining where Northern Cheyenne who return to find work, but are unable to, would live on the Reservation, cannot be reliably estimated. Consequently, the numbers in Tables 4-18, 4-19, and 4-20 undercount community-specific population growth associated with the leasing alternatives. Table 4-17 does include these returning Northern Cheyenne and natural increase in the Reservation totals.

Due to the Reservation housing shortage (Chapter 3, Section 3.6.N), most Native Americans returning to the Reservation are expected to move in with relatives or friends. This would allow Native Americans to settle on the Reservation more easily than non-Native Americans, but would further aggravate existing crowding in Native American households. Non-Native Americans and those Native Americans not living with relatives or friends are expected to settle on the Reservation wherever housing is available. It is expected they would locate at scattered individual sites or in existing trailer courts. A summary of population levels in 2005 by leasing alternatives for Native and non-Native Americans is shown in Chapter 4, Section 4.2.6N, Table 4-23.

In addition to population growth on the Northern Cheyenne Reservation, communities nearby, but off-Reservation, would see population growth from development associated with the three leasing alternatives. Population growth in these off-Reservation communities can affect Reservation services, such as roads, law enforcement, Tribal government, and social organization. Those impacts generated from off-Reservation population growth are described in Chapter 4, Sections 4.2.5N, 4.2.6N, and 4.2.7N. Table 4-21 shows population increases in communities near the Reservation during the period 1990 to 2005 from development associated with Leasing Alternative 2A, 2B, and 4. For example, in 2000, the population of Ashland/St. Labre under Leasing Alternative 2A, would be 1,354 more than under the High Baseline Alternative.

Community-specific population values in this section were developed using a gravity model to apportion incoming workers/families to both on and off-Reservation communities. That model is described in detail in Technical Report 2.

Increases in the population of the Northern Cheyenne Reservation for all three leasing alternatives over the High Baseline would be significant. In 2005, population increases range from 10 percent for Leasing Alternative 4, to 7 percent under Leasing Alternative 2B. Increases in off-Reservation population in the communities of Colstrip and Broadus for each leasing alternative would be 5 percent or less. The population change for Ashland/St. Labre is projected to increase by 124 percent under Leasing Alternative 2B, 265 percent under Leasing Alternative 2A, and 450 percent under Leasing Alternative 4.

TABLE 4-18
COMMUNITY SPECIFIC POPULATION CHANGE[1] — LEASING ALTERNATIVE 2A
Northern Cheyenne Reservation

	1990		1995		2000		2005	
Community	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
Ashland Village	0	0	2	11	10	46	15	58
Birney Village	0	0	0	1	0	2	0	3
Busby	0	0	0	0	2	3	2	4
Lame Deer	0	0	1	6	6	26	8	31
Muddy	0	0	0	0	0	2	2	5
TOTAL	0	0	3	18	18	79	27	101

[1]Represents only the population change associated with direct and indirect employment. Changes are measured against the High Baseline Alternative.

Source: BLM, 1988

TABLE 4-19
COMMUNITY SPECIFIC POPULATION CHANGE[1] — LEASING ALTERNATIVE 2B
Northern Cheyenne Reservation

	1990		1995		2000		2005	
Community	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
Ashland Village	0	0	0	0	4	37	8	53
Birney Village	0	0	0	0	0	3	0	4
Busby	0	0	0	0	0	4	2	4
Lame Deer	0	0	0	0	3	24	5	33
Muddy	0	0	0	0	0	2	0	2
TOTAL	0	0	0	0	7	70	15	96

[1]Represents only the population change associated with direct and indirect employment. Changes are measured against the High Baseline Alternative.

Source: BLM, 1988

TABLE 4-20
COMMUNITY SPECIFIC POPULATION CHANGE[1] — LEASING ALTERNATIVE 4
Northern Cheyenne Reservation

	1990		1995		2000		2005	
Community	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
Ashland Village	0	0	2	11	15	42	24	64
Birney Village	0	0	0	1	0	3	1	3
Busby	0	0	0	0	4	4	3	4
Lame Deer	0	0	1	6	11	28	17	38
Muddy	0	0	0	0	0	2	1	2
TOTAL	0	0	3	18	30	79	46	111

[1]Represents only the population change associated with direct and indirect employment. Changes are measured against the High Baseline Alternative.

Source: BLM, 1988

4.2.3N Income

Household income on the Reservation is expected to rise as a result of increased employment of Reservation residents due to each of the three leasing alternatives. Because of the greater employment and overall development associated with Leasing Alternative 4, it would generate the greatest increase in household income and business activity on the Reservation among the three leasing alternatives, a forecast almost double that for Leasing Alternative 2B. Table 4-22 shows both totals and changes in household income and business activity for Leasing Alternatives 2A, 2B, and 4. For example, in 2005, household income on the Northern Cheyenne Reservation is forecasted to be $2,790,000 greater than the High Baseline Alternative level of $18,820,000, a 15 percent increase under Leasing Alternative 2A.

Increases in household income on the Reservation do not proportionally increase Reservation business activity. For example, business activity on the Reservation in the year 2005 is forecasted to increase by $580,000; this represents less than 1 percent of the increase in total regional business activity resulting from Leasing Alternative 2A. This indicates a weak link between the economy of the Northern Cheyenne Reservation and that of the rest of the Montana portion of the Powder River Region. In addition, a substantial portion of the household income (i.e., payroll dollars) on

TABLE 4-21
POPULATION CHANGE[1]
COMMUNITIES ADJACENT TO
NORTHERN CHEYENNE RESERVATION

	1990	1995	2000	2005
LEASING ALTERNATIVE 2A				
Ashland/St. Labre	0	118	1,354	2,051
Colstrip	0	5	45	49
Broadus	0	2	23	24
LEASING ALTERNATIVE 2B				
Ashland/St. Labre	0	0	655	958
Colstrip	0	0	30	37
Broadus	0	0	14	17
LEASING ALTERNATIVE 4				
Ashland/St. Labre	0	118	1,823	3,491
Colstrip	0	5	73	96
Broadus	0	2	36	46

[1]Changes are measured against the High Baseline Alternative.

Source: BLM, 1988

the Reservation is spent off the Reservation, and those dollars spent on the Reservation do not circulate long before flowing off the Reservation. Therefore, off-Reservation development is not expected to have a significant impact upon on-Reservation business activity under any of the three leasing alternatives (see Technical Report 1).

It is expected that large scale regional development would lead to increased price levels. Studies of price increases from past development (Feeney, et al., 1986) indicate that price levels have increased with large scale regional economic development in the Powder River Region of Montana. With this past record, it is likely that there would be an increase in the general price level on the Reservation due to off-Reservation coal development. As prices rise, those households on fixed incomes or whose income does not keep up with increasing price levels would experience a decline in purchasing power. In addition, private housing prices, both on- and off-Reservation, are likely to increase (see Chapter 4, Section 4.2.6N). More Reservation residents are likely to see declines in their standard of living relative to the rest of the region because fewer Reservation residents are expected to be able to take advantage of employment opportunities related to coal development. Given the proximity of the Northern Cheyenne Reservation to the

TABLE 4-22
HOUSEHOLD INCOME AND BUSINESS ACTIVITY
Northern Cheyenne Reservation

	Household Income				Business Activity			
Year	High Baseline	Cumulative Impact[1]	Change[2]	Percentage Change[2]	High Baseline	Cumulative Impact[1]	Change[2]	Percentage Change[2]
LEASING ALTERNATIVE 2A								
1986	$17,960,000	$17,960,000	0	0	$16,700,000	$16,700,000	0	0
1990	16,400,000	16,400,000	0	0	15,680,000	15,680,000	0	0
1995	18,690,000	19,240,000	$550,000	3	16,150,000	16,260,000	$110,000	1
2000	18,820,000	21,290,000	2,470,000	13	16,180,000	16,690,000	510,000	3
2005	18,820,000	21,610,000	2,790,000	15	16,180,000	16,760,000	580,000	4
LEASING ALTERNATIVE 2B								
1986	17,960,000	17,960,000	0	0	16,700,000	16,700,000	0	0
1990	16,400,000	16,400,000	0	0	15,680,000	15,680,000	0	0
1995	18,690,000	18,690,000	0	0	16,150,000	16,150,000	0	0
2000	18,820,000	20,690,000	1,870,000	10	16,180,000	16,570,000	390,000	2
2005	18,820,000	21,240,000	2,420,000	13	16,180,000	16,680,000	500,000	3
LEASING ALTERNATIVE 4								
1986	17,960,000	17,960,000	0	0	16,700,000	16,700,000	0	0
1990	16,400,000	16,400,000	0	0	15,680,000	15,680,000	0	0
1995	18,690,000	19,240,000	550,000	3	16,150,000	16,260,000	110,000	1
2000	18,820,000	21,930,000	3,110,000	17	16,180,000	16,830,000	650,000	4
2005	18,820,000	23,200,000	4,380,000	23	16,180,000	17,090,000	910,000	6

[1] The cumulative impact is the sum of the High Baseline and the change due to the Leasing Alternative.
[2] Changes in this column measured against the High Baseline Alternative.

Source: BLM, 1988

new mine tracts and the distance from the Reservation to trade centers, such as Billings and Sheridan, the upward pressure on prices is expected to be modest with either Leasing Alternative 2A or 2B and significant with Leasing Alternative 4.

Increases in the level of household income on the Northern Cheyenne Reservation would be significant for all three leasing alternatives. In 2005, the percentage increase is highest for Leasing Alternative 4 at 23 percent and lowest for Leasing Alternative 2B at 13 percent. In 2005, increases in the level of business activity over the High Baseline Alternative are much smaller, ranging from 6 percent for Leasing Alternative 4, to 3 percent for Leasing Alternative 2B. Under each of the leasing alternatives, household income is forecasted to grow faster than the population of the Northern Cheyenne Reservation.

4.2.4N Fiscal Conditions

Revenues

Tribal revenues are not expected to increase between 1987 and 2005. Coal development off the Reservation would not generate revenues to the Tribal government, and other sources of revenue for Reservation projects and programs have disappeared as grant money from federal sources has diminished in the recent past.

The Tribe does not tax persons, property, or income on the Reservation so any increases in population or income associated with the three leasing alternatives would not lead to increases in Tribal revenues. The weak economic link between the Northern Cheyenne Reservation and the rest of the Powder River Region of Montana (see I/O model description in Technical Report 1) indicates there would be little, if any, stimulus to Reservation businesses. Tribal budgets, highly dependent upon the sale or lease of Reservation resources, have been declining since 1983 and are expected to continue, at least until 1990. These factors continue to produce a bleak revenue picture for the Northern Cheyenne at a time when the Tribe would experience additional demands on Tribal services (Chapter 4, Section 4.2.6N) due to impacts from the three leasing alternatives. The development of Leasing Alternatives 2A, 2B, and 4 would not significantly impact Northern Cheyenne Tribal revenues.

The Northern Cheyenne tribe has expressed concern that leasing of federal coal in the Powder River Region could adversely affect the value of Northern Cheyenne coal should the Tribe decide to develop their off-Reservation coal reserves. The following impact analysis was done as a result of this concern.

Several points were considered in reaching a conclusion about possible impacts to Northern Cheyenne coal from leasing of federal coal tracts in Montana. These points are:

1. Northern Cheyenne coal is comparable in quality, quantity, and minability to both federal and fee coal in the Montana portion of the Powder River Region.

2. Recent exemption of the Montana coal severance tax and gross-proceeds tax on Indian coal would provide the Northern Cheyenne Tribe with more flexibility in negotiating coal contracts.

3. Opportunities for development of Northern Cheyenne coal have been at least equal, if not better, than those of federal coal because of three moratoriums on federal coal leasing during the last 17 years. Currently, there is no Powder River II regional coal sale scheduled.

4. Northern Cheyenne coal reserves have been and continue to be available for leasing primarily at the discretion of the Northern Cheyenne Tribe.

Based on these considerations, it is not expected that leasing of Montana's Round I tracts would adversely affect the value of Northern Cheyenne coal. However, Powder River Basin coal coming from northern Wyoming could also be in competition with Northern Cheyenne coal. Coal mining operations in the Gillette, Wyoming area, have certain competitive advantages over coal operations in Montana, including Indian-owned coal. These advantages are:

1. The Wyoming new mine tracts leased at the 1982 Powder River sale, all in the Gillette area, contributed additional productive capacity to an area that currently has over-capacity through the year 2005. This would, if other things are equal, enhance northern Wyoming's ability to supply coal under new contracts.

2. Transportation costs could be more competitive from the Gillette area to Eastern and Southern markets because of competing railroad companies serving the Gillette area.

3. Mines in the Gillette area generally have thicker coal seams, less overburden, and lower mining costs.

4. In the past, Wyoming coal severance taxes were less than those on coal in Montana, including Indian coal. That condition no longer is true. Given the recent exclusion of state severance taxes on Indian coal in Montana, it is unlikely that Gillette area coal (which is likely to have severance taxes of some amount) would maintain a tax advantage over Indian coal from Montana.

It is not clear whether these advantages would be offset by the exemption of the Montana severance and gross-proceeds taxes on Indian coal. It is likely, however, that federal coal from Wyoming tracts would pose a greater threat to Northern Cheyenne coal than would federal coal from Montana tracts. The number of existing and proposed mines and undeveloped leases in the Gillette area suggest that at least, in the past, this area had the competitive edge for the Midwestern, Front Range, and Gulf Coast markets. The relative competitiveness and marketability of Northern Cheyenne coal versus Gillette-area coal would depend, to a great extent, on how successful the Northern Cheyenne are at identifying market areas and negotiating new contracts. See Technical Report 5 for a more detailed discussion of the possible impacts to Indian coal.

Expenditures

Increased population levels on and nearby the Northern Cheyenne Reservation from Leasing Alternative 2A, 2B,

and 4, will create the need for more service expenditures. These expenditures, by leasing alternative, are described for the various affected services in Chapter 4, Section 4.2.6N. The needed expenditures are summarized in Chapter 4, Section 4.2.6N, Table 4-27.

Needed expenditures would require funding from many sources, including the Northern Cheyenne Tribe, BIA, IHS, and HUD. It is unclear whether these agencies would be able to make additional funds available to meet these expenditures.

Expenditures needed to meet the higher demand for housing and services due to all these leasing alternatives would increase significantly. Increased expenditure needs include both capital and operating costs. In 2005, expenditure needs would be greatest for Leasing Alternative 4 and smallest for Leasing Alternative 2B.

In conclusion, the development of any of the three leasing alternatives would have no significant impact on the level of Tribal revenues, while needed expenditures for service demands due to each of the leasing alternatives are expected to increase significantly.

4.2.5N Tribal Government

Development associated with the three leasing alternatives would affect Northern Cheyenne Tribal government structure and function. In recent years, Tribal government has become more complex and more involved in coordinating with outside governments (Feeney, et al., 1986). This was due, in part, to energy development in the Montana portion of the Powder River Region in the 1970s and 1980s. Population increases under each of the three leasing alternatives on and near the Reservation, especially in the Ashland/St. Labre area, would lead to more jurisdictional problems between Tribal government and state, county, and federal governments. The divided jurisdiction of law enforcement on the Reservation provides a good example. The Tribe does not have criminal jurisdiction over non-Native Americans, and jurisdiction over crimes committed by Native Americans on the Reservation generally depends upon the type of crime committed. With more non-Native Americans in the Reservation area, the need for coordination between BIA law enforcement and county law enforcement would increase. A summary of levels of Native American and non-Native American population on the Northern Cheyenne Reservation in 2005 is shown in Chapter 4, Section 4.2.6N, Table 4-23.

The budgets of the BIA and the Northern Cheyenne Tribe have recently declined (Chapter 3, Section 3.4.N) and are expected to continue to decline at the same time that Tribal government would need to deal with complex issues and increased coordination. Therefore, the ability of the Tribe to respond to development would be further impaired. The Tribe currently provides a variety of social services, some of which are funded by BIA. As the population on the Reservation increases under each of the three leasing alternatives (see Chapter 4, Section 4.2.2N), Tribal members may request additional services and more support for existing services from the Tribal government. These demands would occur at a time when Tribal budgets would not allow expansion of services, a situation that could create additional conflict between the Tribal government and Tribal members.

As the complexity of government grows, a demand for more Northern Cheyenne Tribal government employment could occur. In addition, the Tribal office building which is currently in need of repair may have to be expanded to add office space if the Tribe is able to obtain funds to increase Tribal employment.

Increased government complexity on the Northern Cheyenne Reservation could mean a reduction in the amount of individual participation in government meetings by Tribal members. More issues are likely to be delegated to special committees where fewer Tribal members would participate. This could increase the feeling among some groups on the Reservation that their views are not being heard and that the government does not represent them. At the extreme, these feelings could lead to increased factionalism on the Reservation, resulting in more political disputes within the Tribe. Although impacts to Tribal government cannot be directly quantified, population growth, increased traffic, and other growth variables can be used as proxies for the likely level of impacts to Tribal government. The magnitude of these indicate that Northern Cheyenne Tribal government could be most significantly affected by Leasing Alternative 4, and to a lesser extent, by Leasing Alternative 2A or 2B.

The cumulative impact on Tribal government of the High Baseline and any of the three leasing alternatives would be greater than for any of the leasing alternatives alone.

4.2.6N Housing, Services, Infrastructure

This section describes the impacts to housing, services, and infrastructure on the Northern Cheyenne Reservation due to population growth associated with the three leasing alternatives. In addition to population growth associated directly with mining and secondary employment, regional coal development is expected to stimulate a return-migration of Tribal members to the Reservation in search of employment. Inmigration of Native Americans in search of employment accounts for much of the increase in service demand under the three leasing alternatives. Because population change creates the majority of service-related impacts, a summary table of population levels, by leasing alternative, is presented below (Table 4-23) for the year 2005. Chapter 4, Section 4.2.2N presents population information in greater detail.

Tables 4-24, 4-25, and 4-26 show the increased demand on Reservation facilities and services for Leasing Alternatives 2A, 2B, and 4, respectively, during the period 1995 to 2005. Native Americans and non-Native Americans services are discussed separately in cases where service provision does not apply equally to both groups. The forecasted demand placed on Reservation services by all three leasing alternatives would require additional funding if those ser-

TABLE 4-23
POPULATION TOTALS
Northern Cheyenne Reservation
2005

High Baseline		Leasing Alt. 2A		Leasing Alt. 2B		Leasing Alt. 4	
Native Am	Non-Native	Native Am	Non-Native	Native Am	Non-Native	Native Am	Non-Native
5,760	624	6,145	725	6,133	720	6,272	735
Percentage Increase Over High Baseline:		7	16	6	15	9	18

Source: BLM, 1988

vices are to be provided. Table 4-27 shows the needed capital expenditures and annual operating costs for each of the leasing alternatives in the year 2005 on the Northern Cheyenne Reservation. The service-demand values presented in this section are calculated using regional service-demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. These are both described in Technical Report 3.

The section below briefly discusses each of the various services. The service-demand estimates and associated cost estimates in the above tables are based on changes over the High Baseline Alternative and represent providing adequate service to that increment of population change resulting from each of the three leasing alternatives. A high level of concern was expressed at the Northern Cheyenne Scoping Meeting (BLM, 1987), in letters received during the scoping process and at individual interviews on the Reservation, regarding the possible impacts to Reservation services from regional coal development.

Construction of mines in Leasing Alternatives 2A and 4 is projected to begin in 1994 and end in 2000 or 2001. Full production at all mines, and consequently maximum impact to services and infrastructure, would occur in 2004 and continue for approximately 40 years. Construction for Leasing Alternative 2B projects would occur from 1996 through 2000 with full production starting in 2004.

Housing

Demand for housing would be high under the three leasing alternatives. There is currently a severe shortage of units for both rent and purchase on the Reservation (Feeney, et al., 1986; M. Bearcomesout, 1987). Construction by the Northern Cheyenne Housing Authority to eliminate the housing shortage is limited by lack of funding. It is unlikely the 1988 and High Baseline Alternative combined deficiencies of 827 housing units would be met by 2005, much less the provision of 102 or 99 additional units needed as a result of Leasing Alternative 2A or 2B, respectively, and the 127 units needed under Leasing Alternative 4. Newly formed Native American families and Native Americans returning to the Reservation would probably live with friends or relatives and thereby exacerbate the current crowded conditions of existing housing units.

It is assumed that the limited number of housing units available on the Reservation, coupled with difficulty in obtaining housing sites, would restrict the number of non-Native American families settling on the Reservation. That is, the demand for family housing on the Reservation would exceed supply under all three leasing alternatives. As development associated with the three leasing alternatives begins, it is assumed five housing units that could accommodate families would become available to non-Native Americans on the Reservation. This number would grow to 25 by the year 2005. These figures indicate the number of housing units that would be available after High Baseline demand was met. Technical Report 4 describes how housing availability was calculated. The acquisition of these 25 housing units by 25 non-Native American families (a supply of housing that would be exhausted under all three alternatives) would mean less housing available to current and future Native American Reservation residents. Ashland Village and Lame Deer are the two communities on the Reservation most likely to receive additional housing pressure by non-Native Americans.

Spaces for recreation vehicles and trailers would be available in and near Lame Deer to accommodate an estimated 15 single workers in 1995; this number would increase to accommodate 36 workers by 2005. These figures indicate the number of single housing units that would be available after the High Baseline demand was met. The demand for lease/rental units created by non-Native American single workers under Leasing Alternatives 2A and 2B could be met by the forecasted available housing. It would not be met under Leasing Alternative 4.

Due to the housing shortage on the Reservation, those units which are available to both Native Americans and non-Native Americans would be in great demand as a result of population growth associated with the three leasing alternatives. This demand would put upward pressure on rents and prices for these on-Reservation units. Off-Reservation rents and prices are likely to moderate as housing supply increases due to increased capital available for construction. An increase in private housing supply on the Reservation is not likely to occur due to a lack of development capital and suitable homesites. Because prices for private housing on the Reservation are likely to remain high and in short supply for a longer time than off-Reservation, there would be an incentive for people competing for housing in the region to settle off the Reservation.

TABLE 4-24
CHANGES[1] IN FACILITIES/SERVICES — LEASING ALTERNATIVE 2A
Northern Cheyenne Reservation

	Changes Due to Leasing Alternative 2A Only			Cumulative Impacts of Leasing Alternative 2A and the High Baseline Alternative — 2005
	1995	2000	2005	
No. Housing Units That Can Accommodate Families:				
Native American Families	1	69	77	468
Non-Native American Families	5	17	25	41
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	0	2	2	3
Non-Native American Singles	6	25	16	20
Water Requirements:				
Water Flows (gpd)*	500	52200	57700	350900
Water Storage (gpd)*	800	86900	96200	584800
Sewage Treatment Requirements (gpd):*	300	34800	38500	233900
Schools:				
No. Students in Grades 1-8[2]	1	47	55	294
No. Students in Grades 9-12[2]	0	11	13	67
No. Teachers in Grades 1-8[3]	0	2.5	3.0	16.5
No. Teachers in Grades 9-12[3]	0	0.5	0.5	3.5
Sq. Ft. School Space, Grades 1-8[3]	100	4700	5500	29400
Sq. Ft. School Space, Grades 9-12[3]	0	1400	1600	8400
Health Care:				
No. of Physicians				
Native American	0	0.5	0.5	3.0
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	0	0	1.0
Non-Native American	0	0	0	0
No. Nurses				
Native American	0	1.0	1.0	6.0
Hospital Beds				
Native American[4]	0	1.5	1.5	9.5
Non-Native American	0	0.5	0.5	0.5
Ambulance Service				
Personnel	0	0	0	5
Vehicles	0	0	0	1
Law Enforcement:				
No. of Officers	0	1.5	2.0	9.5
No. of Vehicles	0	1.0	1.0	3.0
Sq. Ft. Office Space	0	150	200	950
Fire Protection:				
No. of Volunteer Officers	0	10	10	10
No. of Vehicles	0	1	1	1
Sq. Ft. Office/Storage Space	0	1000	1000	1000
Social Services:				
No. of Social Workers				
Native American	0	1.0	1.0	5.5
Non-Native American	0	0	0	0
Population Change:				
Native American	3	348	385	2339
Non-Native American	18	79	101	160

*gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for columns 1, 2 and 3 are measured against High Baseline. The fourth column includes Leasing Alternative 2A and the High Baseline measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

TABLE 4-25
CHANGES[1] IN FACILITIES/SERVICES — LEASING ALTERNATIVE 2B
Northern Cheyenne Reservation

	Changes Due to Leasing Alternative 2B Only		Cumulative Impacts of Leasing Alternative 2B and the High Baseline Alternative — 2005
	2000	2005	
No. Housing Units That Can Accommodate Families:			
Native American Families	67	74	465
Non-Native American Families	17	25	41
No. Housing Units That Can Accommodate Single Workers:			
Native American Singles	1	1	2
Non-Native American Singles	19	11	15
Water Requirements:			
Water Flows (gpd)*	50500	56000	349100
Water Storage (gpd)*	84100	93400	581900
Sewage Treatment Requirements (gpd):*	33600	37300	232800
Schools:			
No. Students in Grades 1-8[2]	45	54	293
No. Students in Grades 9-12[2]	10	12	66
No. Teachers in Grades 1-8[3]	2.5	3.0	16.5
No. Teachers in Grades 9-12[3]	.5	.5	3.5
Sq. Ft. School Space, Grades 1-8[3]	4500	5400	29300
Sq. Ft. School Space, Grades 9-12[3]	1300	1500	8300
Health Care:			
No. of Physicians			
Native American	.5	.5	3.0
Non-Native American	0	0	0
No. Dentists			
Native American	0	0	1.0
Non-Native American	0	0	0
No. Nurses			
Native American	1.0	1.0	6.0
Hospital Beds			
Native American[4]	1.5	1.5	9.5
Non-Native American	.5	.5	.5
Ambulance Service			
Personnel	0	0	5
Vehicles	0	0	1
Law Enforcement:			
No. of Officers	1.5	1.5	9.0
No. of Vehicles	1	1.0	3.0
Sq. Ft. Office Space	150	150	900
Fire Protection:			
No. of Volunteer Officers	10	10	10
No. of Vehicles	1.0	1.0	1.0
Sq. Ft. Office/Storage Space	1000	1000	1000
Social Services:			
No. of Social Workers			
Native American	1.0	1.0	5.5
Non-Native American	0	0	0
Population Change:			
Native American	336	373	2327
Non-Native American	70	96	155

*gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for columns 1 and 2 are measured against High Baseline. The third column includes Leasing Alternative 2B and the High Baseline measured against 1987. A column for 1995 is not included because Leasing Alternative 2B development does not begin until 1996.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

TABLE 4-26
CHANGES[1] IN FACILITIES/SERVICES — LEASING ALTERNATIVE 4
Northern Cheyenne Reservation

	Changes Due to Leasing Alternative 4 Only			Cumulative Impacts of Leasing Alternative 4 and the High Baseline Alternative — 2005
	1995	2000	2005	
No. Housing Units That Can Accommodate Families:				
Native American Families	1	77	102	493
Non-Native American Families	5	17	25	41
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	0	3	4	5
Non-Native American Singles	6	28	26	30
Water Requirements:				
Water Flows (gpd)*	500	57900	76800	369900
Water Storage (gpd)*	800	96500	128000	616500
Sewage Treatment Requirements (gpd):*	300	38600	51200	246600
Schools:				
No. Students in Grades 1-8[2]	1	51	71	310
No. Students in Grades 9-12[2]	0	12	16	70
No. Teachers in Grades 1-8[3]	0	3.0	4.0	17.5
No. Teachers in Grades 9-12[3]	0	.5	1.0	4.0
Sq. Ft. School Space, Grades 1-8[3]	100	5100	7100	31000
Sq. Ft. School Space, Grades 9-12[3]	0	1500	2000	8800
Health Care:				
No. of Physicians				
Native American	0	.5	.5	3.0
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	0	.5	1.5
Non-Native American	0	0	0	0
No. Nurses				
Native American	0	1.0	1.5	6.5
Hospital Beds				
Native American[4]	0	1.5	2.0	10.0
Non-Native American	0	.5	.5	.5
Ambulance Service				
Personnel	0	0	0	5
Vehicles	0	0	0	1
Law Enforcement:				
No. of Officers	0	1.5	2.5	10.0
No. of Vehicles	0	1.0	1.0	3.0
Sq. Ft. Office Space	0	150	250	1000
Fire Protection:				
No. of Volunteer Officers	0	10	10	10
No. of Vehicles	0	1	1	1
Sq. Ft. Office/Storage Space	0	1000	1000	1000
Social Services:				
No. of Social Workers				
Native American	0	1.0	1.0	5.5
Non-Native American	0	0	0	0
Population Change:				
Native American	3	386	512	2466
Non-Native American	18	79	111	170

*gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for columns 1, 2 and 3 are measured against High Baseline. The fourth column includes Leasing Alternative 4 and the High Baseline measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

TABLE 4-27
ADDITIONAL SERVICE EXPENDITURES NEEDED[1]
Northern Cheyenne Reservation
2005

	High Baseline Alternative	Leasing Alt. 2A	Leasing Alt. 2B	Leasing Alt. 4
Housing				
Capital Costs	$20,384,000	$4,108,000	$3,900,000	$5,512,000
Operating Costs	183,000	37,000	35,000	50,000
Water				
Capital Costs	3,810,000	751,000	727,000	998,000
Operating Costs	52,000	10,000	10,000	14,000
Sewer				
Capital Costs	4,592,000	905,000	877,000	1,203,000
Operating Costs	33,000	7,000	6,000	9,000
Solid Waste				
Capital Costs	36,000	4,000	4,000	4,000
Operating Costs	35,000	7,000	7,000	7,000
Education				
Capital Costs	2,944,000	686,000	662,000	874,000
Operating Costs	1,545,000	386,000	348,000	459,000
Health Care				
Capital Costs	848,000	205,000	205,000	256,000
Operating Costs	1,274,000	256,000	248,000	339,000
Law Enforcement				
Capital Costs	120,000	41,000	35,000	46,000
Operating Costs	391,000	94,000	91,000	121,000
Fire Protection				
Capital Costs	0	175,000	175,000	175,000
Operating Costs	24,000	6,000	6,000	7,000
Roads				
Capital Costs		No reliable information available		
Operating Costs				
Recreation				
Capital Costs	38,000	19,000	19,000	19,000
Operating Costs	66,000	22,000	22,000	22,000
Social Services				
Capital Costs	50,000	11,000	11,000	11,000
Operating Costs	162,000	36,000	36,000	36,000

[1] Leasing Alternative figures represent increases over the High Baseline Alternative. High Baseline figures represent increases over 1987. Cumulative impacts can be calculated by adding the High Baseline Alternative numbers to the appropriate leasing alternative numbers.

NOTE: All expenditure figures are in 1985 dollars. Actual expenditures required, in 2005 dollars, would likely be considerably higher depending on the inflation rate between 1985 and 2005. See Technical Reports 3 and 4 for information on how these expenditures were calculated.

Source: BLM, 1988

Concern about housing was frequently mentioned by Reservation residents during the Northern Cheyenne Scoping Meeting and in individual interviews. Impacts to Reservation housing are expected to be severe under each leasing alternative because of the high level of demand which would intensify current (1987) and expected High Baseline inadequate conditions, including crowded housing, and the high levels of expenditures that would be required to meet leasing alternative demands. Impacts to housing under Leasing Alternatives 2A and 2B would be similar to each other, but less than those experienced under Leasing Alternative 4. The cumulative impact to housing from any of the leasing alternatives, when combined with the High Baseline, would be very severe.

Water and Sewer

Water and sewer systems on the Northern Cheyenne Reservation are expected to be affected by all three leasing alternatives. Even if no additional housing were developed, it is probable that the doubling or tripling of families in existing housing would cause existing water and sewer systems, already expected to be stressed by the High Baseline populations, to be further stressed to meet the needs associated with each of the three leasing alternatives. It is assumed that housing acquired by non-Native Americans would either be served by existing systems or by individual wells and septic tanks.

The impacts on water and sewer systems from the leasing alternatives depend on whether additional housing is built. If HUD funds are obtained for housing, IHS funding would also be made available for matching sewer and water systems. If additional housing is not built, moderate impacts would be expected due to the Reservation population increases estimated for each of the three leasing alternatives. Impacts are expected to be similar for Leasing Alternatives 2A and 2B; both of which would be less than Leasing Alternative 4. The cumulative impacts of any of the leasing alternatives, when combined with the High Baseline, would be severe if sewer and water systems are not updated.

Solid Waste

Solid waste is held at canister sites on the Reservation prior to being shipped to off-Reservation dumps. The population increase associated with each of the three leasing alternatives would require the addition of one canister on the Reservation for interim solid waste disposal. The new canister would probably need to be located at either the Lame Deer or Ashland Village site because population growth would be greatest in these two areas. The current (1986-1987) problems with canister sites, (i.e., equipment, maintenance, personnel, high waste disposal costs, and fires) would likely continue. Impacts on solid waste disposal on the Northern Cheyenne Reservation under the three leasing alternatives would be mild if High Baseline Alternative needs were met. However, impacts would be severe under each of the three leasing alternatives if the solid waste disposal sites at Birney Village and Lame Deer were not constructed (or reconstructed), and if additional canisters identified under the High Baseline Alternative were not provided.

Education

There would be an increase of 151, 147, and 194 students in Grades 1 through 12 on the Reservation in the year 2005 under Leasing Alternatives 2A, 2B, and 4, respectively. Reservation students currently have a variety of school options available to them; see Chapter 3, Section 3.6.N for a detailed discussion of these options. Tables 4-24, 4-25, and 4-26 show increased demands for teachers and school space for Lame Deer Elementary and Busby Tribal School. By 2005, there would be a demand for an additional 3.5, 3.5, and 5.0 teachers and 7,100, 6,900, and 9,100 square feet of school building space, under Leasing Alternatives 2A, 2B, and 4, respectively. These figures assume Reservation students would continue to attend Lame Deer Elementary and Busby Tribal schools in their 1987 proportions: 55 percent for Grades 1 through 8 and 25 percent for Grades 9 through 12. (See Technical Report 3 for a discussion of how numbers of Reservation students were calculated.)

By 2005, Reservation students attending the various off-Reservation schools would generate a demand for 4.5, 4.5, and 9 teachers, and 9,300, 9,000, and 11,800 square feet of school space under Leasing Alternatives 2A, 2B, and 4, respectively. These students may be affected by project development if off-Reservation schools become crowded due to off-Reservation population increases. Coal development may act as a catalyst for the development of a high school in the Ashland area, offering another education option for Reservation students. The current problems at all schools, particularly at the high school level, of students frequently switching between schools and high dropout rates, would continue. Northern Cheyenne students would most likely continue to attend off-Reservation schools, such as Colstrip, that offer little involvement with Northern Cheyenne culture or language, long daily commutes over poor roads, and a lack of extracurricular involvement by students and parents because of the long distance between school and home.

Concern about Reservation schools and education of Reservation school children was frequently expressed during the Northern Cheyenne Scoping Meeting and individual interviews on the Reservation. Although many Reservation residents feel that the Colstrip schools offer an excellent educational opportunity for their children, there is concern that Reservation schools deteriorate as Reservation children transfer to off-Reservation schools. Reservation schools are highly dependent upon enrollment-based funding. In addition, there are concerns that the social and cultural life of the Tribe would be affected by the increasing number of children attending off-Reservation schools (See Chapter 4, Section 4.2.7N). The level of these concerns would probably accelerate under each of the three leasing alternatives. Impacts to education are expected to be moderate under all three leasing alternatives because of the increases in students in Reservation schools and the large number of students attending off-Reservation schools.

However, even though impacts to Reservation schools would be similar under all three leasing alternatives, regional educational changes, which could indirectly affect Reservation students and schools, would be greatest under Leasing Alternative 4. The cumulative impact of any of the three leasing alternatives, when combined with the High Baseline, would be severe.

Health Care

Health care on the Northern Cheyenne Reservation would be affected by each of the three leasing alternatives. See Tables 4-24, 4-25, and 4-26 for demands for doctors, dentists, and nurses under the three leasing alternatives. Additional demands could also be placed on the Lame Deer Clinic by Native Americans moving into areas adjacent to the Reservation, such as St. Labre and Ashland.

No major medical care is currently available on the Reservation. The Crow Agency Hospital, which serves the Northern Cheyenne Reservation, would experience increased demands for outpatient and major medical services due to the population growth on the Northern Cheyenne Reservation created by each of the three leasing alternatives. That hospital is on the Crow Reservation in the town of Crow Agency. Additional Contract Health Service (CHS) funding from the IHS would have to be made available so Native Americans could receive major medical care off-Reservation; in 1987, there was a large deficit in this type of funding. By 2005, an additional 1.5 hospital beds would be needed to meet the demand from the Northern Cheyenne Reservation Native Americans under Leasing Alternatives 2A and 2B; 2 additional hospital beds would be needed under Leasing Alternative 4. Under each leasing alternative, half of the beds would be at the Crow Agency Hospital and half at regional hospitals. See Technical Report 3.

Demand for alcoholism and drug abuse treatment services would increase due to Reservation and regional population growth. This rise in alcoholism and drug abuse would not only generate a higher demand for addiction treatment, but would also be associated with increases in alcohol-related diseases, accidents, suicides, and other violent behaviors, all of which would increase health care service demands.

No medical services are currently available to non-Native Americans on the Reservation except for urgent care and ambulance service. That situation would likely continue because the demand generated by the non-Native American population, even with the increases forecasted under Leasing Alternatives 2A, 2B, and 4 combined with the High Baseline Alternative, would not be sufficient to support a full-time doctor or dentist.

Ambulance Service would be adequate for each of the three leasing alternatives if the additional vehicle and personnel were added under High Baseline Alternative conditions. If they were not added, however, ambulance service would be inadequate. In the year 2005, the number of ambulance calls in response to traffic accidents is forecasted to increase by 11 calls annually with Leasing Alternatives 2A and 2B, and 14 calls annually with Leasing Alternative 4. These increases are based on Reservation population growth and are in addition to the demand from the High Baseline Alternative. Increases in traffic across the Reservation due to regional population growth could also increase the demand on Reservation ambulances; this demand is not quantified.

Demand for urgent medical services, which are available to Native Americans and non-Native Americans from Lame Deer Clinic, would increase with population growth and higher Reservation road usage. The number of people treated by the Lame Deer Clinic in response to motor vehicle accidents (estimated to be 100 in fiscal year 1986, the most recent data available) would increase annually by approximately 13 (over the High Baseline Alternative) for the year 2005 for Leasing Alternative 2A or 2B, and by 16 for Leasing Alternative 4 due to Reservation population increase alone. If traffic increases caused more accidents involving Native Americans, the need for CHS funding would increase so that treatment for serious injuries could be provided off-Reservation.

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned during the Northern Cheyenne scoping process and in individual interviews on the Reservation. Impacts to the health care system are expected to be moderate under each of the leasing alternatives because of the importance of these services and the costs associated with providing them. Impacts to health care would be similar under Leasing Alternative 2A and 2B and greater under Leasing Alternative 4 than for 2A or 2B. The cumulative impacts of any of the three leasing alternatives, when combined with the High Baseline, would be severe.

Law Enforcement

There would be a need for 1.5 to 2.5 additional police officers and 1 police vehicle under each of the three leasing alternatives by 2005. This need would be created by the increases in Reservation population. However, the demand figures may underestimate the situation because, in addition to the demand created directly by Reservation population growth, the police may need to respond to more traffic accidents due to increased regional traffic passing through the Reservation; more crime associated with increases in alcohol and drug abuse; more trespassing due to regional population growth, and more disputes involving Native Americans and non-Native Americans, both on the Reservation and at nearby off-Reservation locations. Increased coverage to outlying areas, such as Birney Village and Ashland Village, would have to be provided. It should be noted that BIA police respond first to all motor vehicle accidents; the Montana Highway Patrol is called in only in fatal accidents or when a non-Native American is at fault. The BIA police are responsible for apprehending and holding non-Native Americans as well as Native American offenders. The adoption of the new legal code on the Northern Cheyenne Reservation may also increase future police work.

The already backlogged Tribal Court system (see Chapter 3, Section 3.6.N) would see an increase in cases, particularly those involving credit transactions, business transactions, and alcohol and drug-related offenses, creating additional impacts the Tribe is poorly equipped to deal with. The problems associated with multiple jurisdictions (see Chapter 3, Section 3.6.N) would further complicate the situation, creating difficulty in the Court's ability to process cases. Problems with law enforcement and multiple jurisdictions are of particular concern to Reservation members and were mentioned frequently at the scoping meeting and during individual interviews on the Reservation.

The impact to the Reservation police and courts from the leasing alternatives is expected to be moderate due to increases in demand for these services and the costs of providing the services. Impacts would be greatest under Leasing Alternative 4; smallest under Leasing Alternative 2B. The cumulative impacts of any of the three leasing alternatives, when combined with the High Baseline, would be severe.

Fire Protection

The population increases under each of the three leasing alternatives indicate the need for an additional fire vehicle and crew. Increases in Reservation traffic could also cause more vehicle fires on the Reservation road system or fires adjacent to roads. However, even with an additional vehicle and crew, the fire protection service would remain very inadequate if an organized structural fire protection service was not developed under the High Baseline Alternative. The impact to structural fire protection under each leasing alternative would be severe if the additional crew and vehicle are not added, or if the organized service is not developed. Impacts would be higher for Leasing Alternative 4 than for Leasing Alternatives 2A and 2B, which are similar.

Increases in the recreational use of the Reservation by Native and non-Native Americans and increased use of canister dump sites (where numerous fires have occurred (Feeney, et al., 1986)) could cause more range and forest fires. If a significant increase occurred in the number of fires, the BIA Forestry Program firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these impacts is unknown.

Roads

Reservation roads are expected to be affected under each of the three leasing alternatives. Tables 4-28, 4-29, and 4-30 show the increased use of Reservation roads under Leasing Alternatives 2A, 2B, and 4, respectively. Traffic on U.S.

TABLE 4-28
INCREASES IN ROAD USE[1] — LEASING ALTERNATIVE 2A
Northern Cheyenne Reservation

	Increases Due to Leasing Alternative 2A Only[2]						Cumulative Impacts of Leasing Alternative 2A and the High Baseline Alternative[3] — 2005	
	1995		2000		2005			
	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips[2]	%
West Border to Lame Deer (U.S. 212)	51	3	214	13	177	11	360	24
Lame Deer to East Border (U.S. 212)	67	4	254	14	207	12	359	23
Lame Deer to North Border (MT 39)	10	1	13	1	10	1	85	8
Lame Deer to Birney Village	0	0	0	0	0	0	1	0
Kirby Road	13	4	46	12	37	10	201	103
Ashland Village to Birney Village	6	3	18	8	15	7	31	16

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activity) is not included.
[2] Increases measured against the High Baseline Alternative.
[3] Increases measured against current figures. Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily average figure.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

TABLE 4-29
INCREASES IN ROAD USE[1] — LEASING ALTERNATIVE 2B
Northern Cheyenne Reservation

	Increases Due to Leasing Alternative 2B Only[2]				Cumulative Impacts of Leasing Alternative 2B and the High Baseline Alternative[3] — 2005	
	2000		2005			
	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%
West Border to Lame Deer (U.S. 212)	184	11	149	9	332	22
Lame Deer to East Border (U.S. 212)	214	12	176	10	328	21
Lame Deer to N. Border (MT 39)	11	1	9	1	84	8
Lame Deer to Birney Village	0	0	0	0	1	0
Kirby Road	24	6	20	6	184	94
Ashland Village to Birney Village	9	4	8	4	24	12

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to mine and expanded regional business activities) is not included.
[2] Increases measured against the High Baseline Alternative.
[3] Increases measured against current figures. Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily average figure.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

TABLE 4-30
INCREASES IN ROAD USE[1] — LEASING ALTERNATIVE 4
Northern Cheyenne Reservation

	Increases Due to Leasing Alternative 4 Only[2]						Cumulative Impacts of Leasing Alternative 4 and the High Baseline Alternative[3] — 2005	
	1995		2000		2005			
	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%
West Border to Lame Deer (U.S. 212)	51	3	498	30	425	25	608	41
Lame Deer to East Border (U.S. 212)	67	4	571	334	482	28	634	40
Lame Deer to N. Border (MT 39)	10	1	26	2	17	1	92	9
Lame Deer to Birney Village	0	0	0	0	0	0	1	0
Kirby Road	13	4	105	28	87	24	251	128
Ashland Village to Birney Village	6	3	37	17	30	14	46	23

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activity) is not included.
[2] Increases measured against the High Baseline Alternative.
[3] Increases measured against current figures. Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily average figure.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

212, the major east-west road across the Northern Cheyenne Reservation, would increase 9 to 12 percent over the High Baseline Alternative and 21 to 24 percent above current (1984 to 1986 average) levels (when combined with the High Baseline Alternative) under either Leasing Alternative 2A or 2B. These figures would increase to 25 to 28 percent and 40 to 41 percent, respectively, with Leasing Alternative 4. Traffic on the rural Kirby Road would increase 24 percent over High Baseline levels and 128 percent over current (1984 to 1986 average) levels (when combined with the High Baseline Alternative) under Leasing Alternative 4. These estimates are based on increases in mine construction and operation commuter traffic. There would be additional traffic from indirect employees, and Reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to the coal mines and expanded regional business activity would also rise. However, these types of increases are very difficult to quantify.

Traffic increases on most roads are forecasted to be higher for the year 2000 than 2005; this occurs because some construction related to the leasing alternatives (Table 4-14) would still be taking place during 2000, and relatively short-term construction workers are generally more willing to travel greater distances to work. The Reservation's primary roads (U.S. 212 and MT 39) have low sufficiency ratings based on a combination of road conditions, capacity, safety, and other rating characteristics (Feeney, et al., 1986). This is of particular concern because of the large number of loaded school buses that cross the Northern Cheyenne Reservation each day. Increased traffic in the Ashland Village and Birney Village areas, and increased congestion and accidents in Lame Deer at the U.S. 212/MT 39 intersection, also concern many residents. Birney Village residents indicate when U.S. 212 between Ashland Village and Lame Deer is blocked or icy, vehicles detour through Birney Village. Some Reservation roads are currently in poor condition and are scheduled for resurfacing and/or reconstructing in the mid-1990s, subject to future Montana Highway Department priorities and funding availability (Sioux, 1987).

Concerns regarding Reservation roads, particularly increases in truck traffic, were expressed at the scoping meeting and frequently during individual interviews. The impact to the Reservation road system is expected to be moderate for Leasing Alternatives 2A and 2B, and moderate to severe for Leasing Alternative 4, due to the traffic increases. These traffic increases would cause higher maintenance costs and more accidents. Use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents may also rise. The cumulative impact to Reservation roads from any of the three leasing alternatives, when combined with the High Baseline Alternative, would be severe.

Recreation

There would be some increased usage of recreational facilities on the Reservation under each of the three leasing alternatives. This would occur because of the population growth on the Reservation and increased usage of the Reservation by people living off-Reservation. There could also be increases in poaching, littering, trespassing, and conflicts over recreation resources and facility use (Feeney, et al., 1986). One compliance officer, to police recreation areas, would be needed under each of the three leasing alternatives, in addition to the three compliance officers required under the High Baseline Alternative. These impacts are expected to be mild.

Social Services

The inmigration of Native Americans projected under each of the three leasing alternatives would place substantial pressure on the already (1987) inadequately staffed Reservation social service system, which provides services such as child welfare, general assistance, etc. One additional social worker would be required over the High Baseline Alternative to meet the increased population needs associated with each of the three leasing alternatives. If returning Native Americans are unable to find employment and/or if the increases in population both on and off the Reservation result in more stress on families, creating more poverty and abuse situations, the demand on social services could increase at an even higher rate than expected. Impacts to social services were frequently mentioned concerns at the Northern Cheyenne Scoping Meeting and in individual interviews on the Reservation. Impacts to social services from the leasing alternatives are expected to be moderate. Impacts from Leasing Alternative 2A would be similar to Leasing Alternative 2B and less for both of these alternatives than for Leasing Alternative 4. The cumulative impacts to social services, when combined with any of the three leasing alternatives, would be severe.

Other Services

Increases in on- and off-Reservation population as a result of each of the three leasing alternatives would lead to increasing pressures on a variety of other services such as care for the elderly and Dull Knife Memorial College in Lame Deer. Most Reservation services are currently experiencing funding shortages so it may be very difficult to expand services for a growing population. For example, Dull Knife Memorial College may see an increase in non-Native American students from off-Reservation communities such as Colstrip and Ashland under all leasing alternatives; the college currently receives no funding from the state or federal government for these students. In recent years, 10 to 20 percent of the students who attend Dull Knife have been non-Native Americans, predominately from Colstrip and Ashland. As these communities grow, it is expected the number of students from these areas would increase. Any increase in non-Native American students would put financial stress on the college. Mild impacts to Dull Knife Memorial College are expected from each of the three leasing alternatives.

4.2.7N Social Organization

Community social organization refers to the structures and processes that organize how people in a community relate to one another. The *Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity, outside ties, distribution of resources/power, coordination and cooperation among people in the community, and patterns of personal interaction. These characteristics are used to discuss impacts to social organization. See Technical Report 6 for a discussion of how this section was developed.

Under each of the three leasing alternatives, severe impacts to social organization would occur on the Northern Cheyenne Reservation because of the following factors: (1) migration of non-Native Americans onto the Reservation (long-term levels would be approximately 15 to 18 percent above the High Baseline 2005 level of 624 for each of the three leasing alternatives), (2) return-migration (migration back onto the Reservation by former residents) of Native Americans, including potential employees and their families in search of the benefits of development, (3) coal-related population increases in areas directly adjacent to the Reservation (the population of the Ashland/St. Labre area can be used as an indicator), (4) regional population growth in areas such as Broadus, Miles City, Sheridan, Colstrip, Forsyth, Hardin, and Billings that are not directly adjacent to the Reservation but nevertheless would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for such activities as shopping, recreation, or schools, (5) Native Americans, both inmigrating and current residents, would obtain direct and indirect employment in the coal mine industry resulting in an increased annual payroll to Reservation Native Americans, and (6) changes in social well-being (see Chapter 4, Section 4.2.8N). Table 4-31 shows, by leasing alternative, the relative changes in each of these impact factors over the High Baseline in the year 2005. The cumulative impact of any of the leasing alternatives, combined with the High Baseline Alternative, would produce very severe changes in Northern Cheyenne social organization. Changes to social organization would be greatest under Leasing Alternative 4.

Greater contact with non-Native Americans, both on- and off-Reservation, and the return-migration of Native Americans who have lived off the Reservation, would increase the diversity of ideas, values and behaviors on the Reservation. More interactions with off-Reservation entities by individuals who work, attend school, recreate, shop, etc., off the Reservation would also occur. These interactions could lead to increased assimilation of the Northern Cheyenne into the White culture.

TABLE 4-31
CHANGES[1] IN IMPACT FACTORS — SOCIAL ORGANIZATION
Northern Cheyenne Reservation
2005

Factors	High Baseline Alternative	Leasing Alt. 2A	Leasing Alt. 2B	Leasing Alt. 4
Inmigration of Non-Native Americans	59	101	96	111
Return Migration of Native Americans [2]	200-250	150-200	150-200	200-250
Off-Reservation Population				
Ashland/St. Labre (1987 population = 513)	262	2,051	958	3,491
Percent change	51%	265%	124%	450%
Colstrip (1987 population = 1,581)	358	49	37	96
Percent change	23%	3%	2%	5%
Change in direct and indirect Native American Employment	77	68	56	117
Total annual associated payroll for Native Americans (Million dollars)	1.7	1.4	1.2	2.5
Level of impact to Reservation roads	Moderate	Moderate	Moderate	Moderate to Severe
Level of impact to social well-being	Severe	Severe	Severe	Severe

[1] Unless otherwise indicated, High Baseline figures are for 2005 measured against 1987; Leasing Alternative figures are for 2005 measured against the High Baseline.
[2] This return-migration would occur during project construction.

Note: Cumulative impacts can be obtained by adding leasing alternative and High Baseline Alternative numbers together.

Source: BLM, 1987

There may be more interaction between the Tribal government and county and state government as the Tribal government attempts to provide for increasing service demands. There may also be an increase in feelings of a local lack or loss of control because the decisions regarding coal development are made off-Reservation. This would be coupled with a high rate of inmigration that would stress the Tribal government's ability to operate efficiently.

Conflict among Native American social groups on the Reservation would probably increase. Much of the current conflict among social groups occurs because of the perceived inequality in access to resources, such as jobs and income. These conflicts would likely increase because the benefits of relatively high paying employment would be obtained by some individuals, while the negative effects of coal development would be felt by most Reservation residents. There may be a decrease in the ability of the residents to coordinate and cooperate because of conflict over coal development and the uneven distribution of benefits, combined with the stress put on service provision by the rapid on- and off-Reservation population increase. The rising demand for services would necessitate increasing cooperation and coordination to manage change.

Some changes in personal interaction may occur with increased potential for conflicts with non-Native Americans, both on the Reservation and in adjacent communities. For example, existing problems between Native Americans and non-Native Americans in Ashland would probably be exacerbated. Rapid growth is expected in the Ashland area, and Ashland may have difficulty dealing with the growth because it is an unincorporated community without a history of coordinated response to development (BLM, 1984; Mountain West Research — North, 1982). The isolated community of Birney Village is particularly vulnerable to changes in social organization caused by increases in Reservation traffic and non-Native American presence on the Reservation. Increased contact could also result in more intermarriage which might affect the ability of the Northern Cheyenne to survive as culturally distinct people (NCPO, 1981).

Even with the changes described, it is expected that the Northern Cheyenne sense of Tribal identity would remain strong. However, increasing exposure to non-Native American ideas would cause cultural conflicts that result in problems for some individuals. The feeling that the Reservation is a homeland for the Northern Cheyenne could be somewhat compromised by increasing traffic on the Reservation and the rapid growth of Ashland, directly adjacent to the Reservation. Kinship ties would remain strong (NCPO, 1981), although patterns of sharing would continue to be modified as younger people become more used to the concept, predominate in White society, that they should be mainly responsible for supporting their nuclear family (Feeney, et al., 1986). This could weaken the support traditionally provided by the extended family and create increased stress on nuclear families and individuals. The modification of sharing patterns could also result in less communal living, making the conveyance of Northern Cheyenne customs and language more difficult.

Under each of the leasing alternatives, coal development would create substantial benefits for the individual Native Americans who were able to obtain employment. Because of traditional sharing patterns, this income may benefit more people than just the families where employment occurs. An increase of 56 to 117 jobs (depending upon the alternative) is significant to a Tribe with an approximately 50 percent unemployment rate and a 1986 full-time employment level of 515. This employment could help the Northern Cheyenne maintain their cultural distinction by allowing them to live on the Reservation while securing employment elsewhere. However, the money earned at the mine would bring increased reliance on a cash economy rather than a barter economy, and increased exposure to other non-Native American values which could indirectly decrease the incidence of communal living and sharing among families.

4.2.8N Social Well-Being

Under each of the three leasing alternatives, changes would occur in social well-being due to changes in availability of services and facilities; changes in employment and business activity; stress caused by changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. Reservation facilities and services would be moderately to severely affected due to on-Reservation and regional population growth. The demand for housing would force the doubling or tripling of families in existing housing. Increased stress on individuals associated with changes in social organization and cultural conditions, housing crowding, service/infrastructure shortfalls, and increased availability of illegal drugs in surrounding communities could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Social conflicts, and the inability of some to obtain employment could lead to more crimes against people and property. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. In addition, there is also concern that alcohol and drug abuse affects the ability of Northern Cheyenne people to practice their traditional religion and of parents to teach their children the Cheyenne way.

An increase in social well-being would occur to those who were able to obtain employment or benefit from business expansion as a result of the increased income on the Reservation. Employment in the coal industry and related fields would provide income to those able to obtain jobs. However, there may be so many returning Northern Cheyenne who do not find work that the unemployment rate may be unchanged or rise, and may leave those inmigrants with less income than they had when they previously lived off the Reservation. Return-migrants unable to obtain employment may push up the rate of demand for welfare and other social services. Employment could also cause problems. For instance, the increased availability of money on the Reservation and the strong sharing tradition could increase the opportunity to use alcohol and drugs. It

should be noted that the aforementioned housing crowding may not be entirely negative because extended families may live together, and as in the past, offer support and share household expenses.

Depression and suicide may rise among the elderly and youth due to rapid social change (NCPO, 1981). A high proportion of the Reservation is very young and at the age in which thrills and risks can be enticing. Social well-being in Ashland Village would be influenced by the rapid population growth in nearby Ashland. This may result in increased alcoholism and drug abuse and conflicts between Native and non-Native Americans. Changes in the highly traditional, isolated, and quiet nature of Birney Village would distress residents and decrease their social well-being.

It is likely that, as a whole, Tribal members would feel less well off after coal development associated with the leasing alternatives. Many of the problems they see as most critical (alcohol and drug abuse, inadequate community services, unemployment and poverty, crime, lack of communication among people, family problems (Feeney, et al., 1986; BLM, 1987)) may be exacerbated by increased coal development. Perhaps of greater importance is the likelihood that those Northern Cheyenne who would not be able to take advantage of benefits associated with coal development would feel further deprived of economic equality. This deprivation might be relative, but it would be a very real perception to the people who experienced it. The presence of individuals and families on the Reservation employed in the coal mine industry and the visibility of regional inmigrants to Colstrip, Ashland, Sheridan, and other communities, coupled with the improvement in such services as schools, shopping and recreation facilities in these off-Reservation communities, could increase such feelings of deprivation among those who do not share the benefits.

Changes in social well-being associated with the three leasing alternatives are expected to be severe. Impacts would be greatest under Leasing Alternative 4. The cumulative effect of any of the leasing alternatives, combined with the High Baseline Alternative, would produce very severe changes in social well-being. See Technical Report 6 for a discussion of how this section was developed. See Chapter 4, Section 4.2.9N for related information on impacts to culture under the three leasing alternatives.

4.2.9N Cultural Conditions

Development of the new mine tracts and expansion/extension tracts associated with Powder River I federal coal leasing would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The Earth-Surface Dome would be transformed into something that is spiritually inert and cosmologically dead. This is an intolerable, irreparable situation according to Cheyenne theology. Spiritual attributes of the environment cannot be reclaimed (Deaver and Tallbull, 1988). Past construction at Colstrip has caused spirits from that area to leave.

Development of new mine tracts, all of which are located just east of the Reservation, is of particular concern to the Northern Cheyenne. See Map 5, map packet, for the location of these new mine tracts. Each of the three federal lease alternatives contains at least two new mine tracts. Cultural impacts resulting from the development of these tracts include (1) disturbance of burial sites, early Cheyenne homesteading sites, battle sites, and areas used in the past for religious purposes that retain spiritual attributes, (2) terrain alterations disturbing the physical and spiritual relationship between the Holy Lodge and its environmental setting, and between Birney and Ashland Villagers and their environmental setting, (3) loss of access to these areas east of the Reservation would limit the Northern Cheyennes ability to continue to collect essential earth paints used in the Sun Dance, and (4) terrain alterations and the increasing population density associated with these proposed new mines which would change the physical and spiritual aspects of the environmental setting.

Terrain alterations associated with tracts along the Reservation's eastern border would disturb the Ashland and Birney Villagers' relationship to their environmental setting. Some of the elders in Birney Village feel that they would be forced to abandon their life-long homes because of this disturbance. Further, the increased noise and traffic associated with the development of these tracts would disturb the isolation and seclusion necessary for current ceremonial activities, including fasting. Terrain alterations would also disturb the relationship between the Holy Lodge (Lodge of the Sacred Hat in Birney Village) and its environmental setting. It has a relationship to the East which would be disturbed.

The change in the distribution of both prairie falcons, red-tailed hawks, and golden eagles would change the distribution of mediators between Cheyenne and the Spirit Beings in the Blue-Sky space. It might also modify their use as cancer medicines (falcons and hawks) and items of ritual significance (eagle feathers). Changes in the distribution of antelope and deer might change access patterns to items of ritual significance; e.g., antelope lower leg bones.

Continuing air and water pollution associated with all expansion/extension tracts and all new mine tracts would pollute the atmosphere in both a physical and spiritual sense. Blocking the sun's rays would continue to upset the balance of spirituality and substance matter. Air and water pollution may also limit the availability of plants necessary for subsistence, religious, and medicinal purposes. It would cause plant specialists among the Northern Cheyenne to have to go further afield to collect the necessary plants. Plants important for religious and medicinal purposes occur in variable densities in different plant communities and associations. Continuing pollution would cause the plant specialists to have to systematically search out new collecting areas. They would not only have to go further in terms of miles, but also expend time and energy finding new source areas.

Each of the alternatives would result in the destruction of wells and springs. This would cause irreparable damage to

the spirits associated with the springs and an indeterminate amount of damage to the spiritual attributes of the ground water. Anytime there is construction activity, the noise, underground disturbance, and disturbance of vegetation damages the interrelationships among the spiritual aspects of the physical setting associated with it. The disturbance may cause the spirits to abandon the area. If the spirits leave in a bad way, the Northern Cheyenne would suffer.

The earth paints currently collected from the source east of the Reservation are absolutely essential to the Sun Dance. If this source is destroyed or if the Northern Cheyenne no longer have access to it, the military societies would determine the proper course of action. The most likely action would be for members of the military societies to search out and direct the appropriate Cheyenne priests to the new paint source. It is extremely demoralizing to the Northern Cheyenne to be unable to get the proper items for a ritual because correctness of the ritual and ritual items is crucial to the success of the ceremony.

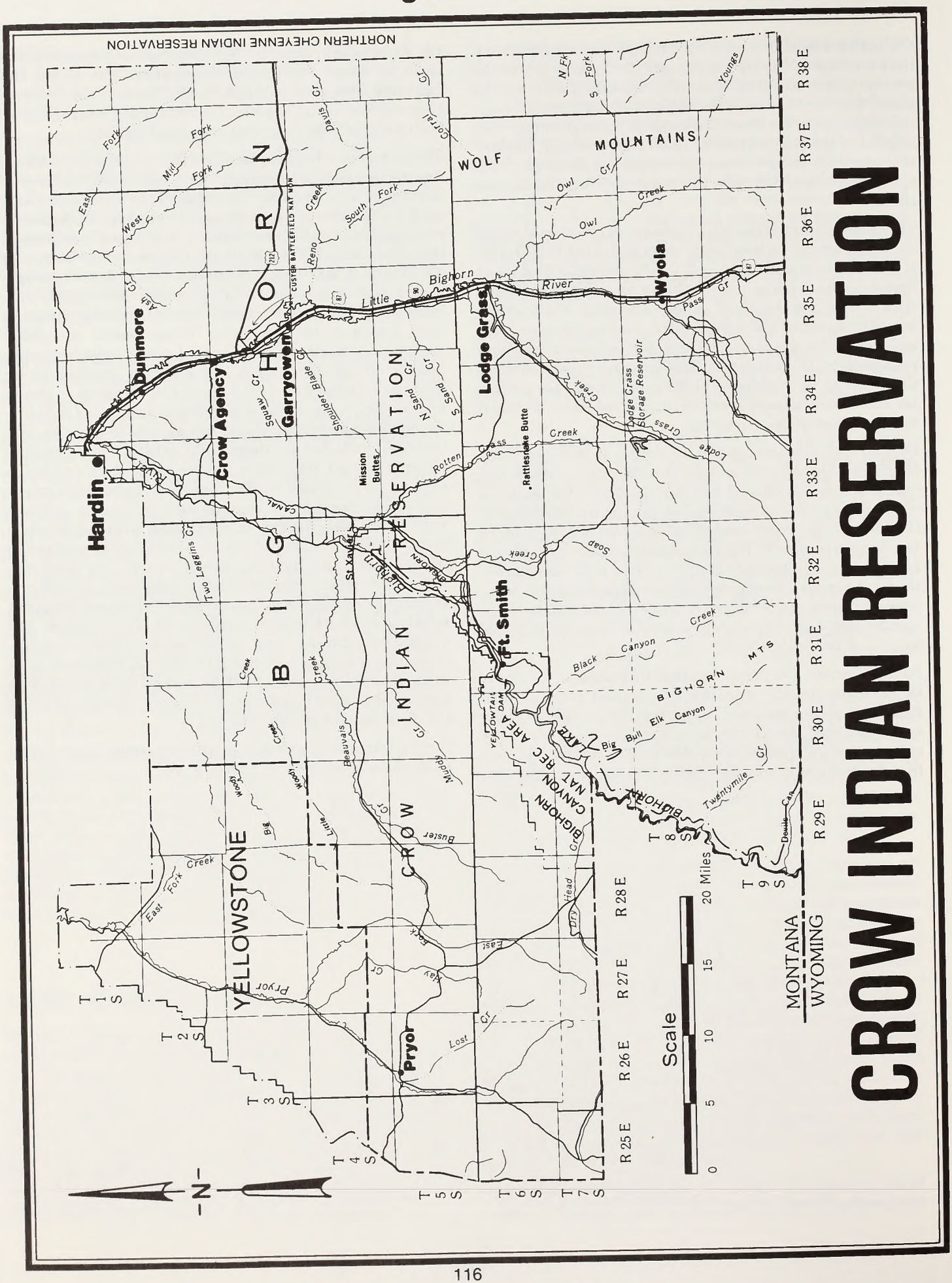
Further, the development of new mine tracts, especially Northwest Otter Creek and Southwest Otter Creek, would reduce the seclusion and privacy necessary for on-going religious practices such as fasting, prayer, and meditation. (The Northwest Otter Creek Tract is included in each of the leasing alternatives.) The reduction of social and physical isolation would also result in Birney Village children growing up in a more stressful environmental setting and being limited in their ability to range free over a rural landscape and develop a proper respect for the spiritual and physical aspects of the environment.

Some Northern Cheyenne feel that their ethnic identity is threatened by the continuing development of off-Reservation coal mining. The perception is that the reservation is being encircled by strip mines. Anxiety levels are extremely high because many Northern Cheyenne believe that it is just a matter of time before the mines expand onto the Reservation. This, from the Northern Cheyenne point of view, would destroy the Reservation and, hence, the Northern Cheyenne as a people. The threat to the Reservation and Northern Cheyenne ethnic identity is perceived by both the traditionalists and non-traditionalists.

The Northern Cheyenne perceive that a series of problems are automatically associated with continued coal development in southeastern Montana. This results in widespread anxiety which affects people's self-perceptions and relationships with their families and other members of their communities. The Northern Cheyenne fear becoming a minority on their own Reservation, loss of their language, and a wide array of social problems associated with increasing population density and increasing contacts with the dominant society. These social problems include: (1) Northern Cheyenne increasingly becoming targets of discrimination, (2) children coming under increased stress and being unable to develop a proper respect for the spiritual and physical aspects of the environment because they would not be able to grow up in a peaceful, secluded environmental setting, (3) increasing alcoholism and drug abuse, (4) loss of privacy and seclusion due to increased traffic, and (5) an increase in crime. Increasing population density and increasing contacts with the dominant society associated with the development of all tracts would create a social environment in which speaking Cheyenne would receive less reinforcement than it does currently and, consequently, would contribute to language loss. This is a cultural impact because a people's most general conceptions of order, beliefs, and values are encoded and reinforced by their language. Members of Ashland Village have already noted a change in children's lifestyles and attitudes and have reported an increase in racial tension on both sides just as a result of the development of Colstrip.

Severe impacts to cultural conditions would occur under each of the three leasing alternatives.

Figure 4-2


CROW INDIAN RESERVATION
NORTHERN CHEYENNE INDIAN RESERVATION
BIG HORN
YELLOWSTONE
CROW INDIAN RESERVATION
WOLF MOUNTAINS
BIGHORN MTS
BIGHORN CANYON NAT REC AREA
YELLOWTAIL DAM
LAKE
Hardin
Crow Agency
Garryowen
Dunmore
Lodge Grass
Wyola
Pryor
Ft. Smith
St Xavier
Mission Buttes
Rattlesnake Butte
Lodge Grass Storage Reservoir
CUSTER BATTLEFIELD NAT MON
Little Bighorn River
Rotten Grass Creek
Soap Creek
Owl Creek
Reno Creek
Davis Creek
Shoulder Blade Cr
Shaw Cr
N Sand Cr
S Sand Cr
Two Leggins Cr
Beauvais Creek
Muddy Cr
Buster Cr
Dry Head Cr
Black Canyon Creek
Big Bull Elk Canyon
Twentymile Cr
Devils Cap
Lost Cr
Pryor Creek
East Fork Pryor Cr
Little Big Horn Canal
MONTANA
WYOMING
Scale
0 5 10 15 20 Miles
N
T 1 S
T 2 S
T 3 S
T 4 S
T 5 S
T 6 S
T 7 S
T 8 S
T 9 S
R 25 E
R 26 E
R 27 E
R 28 E
R 29 E
R 30 E
R 31 E
R 32 E
R 33 E
R 34 E
R 35 E
R 36 E
R 37 E
R 38 E

4.2.1C Employment

The development of each of the three leasing alternatives would employ some residents of the Crow Reservation. The impact of this employment on the Reservation economy would not be significant. Tables 4-32 and 4-33 show direct and indirect employment changes for Leasing Alternatives 2A, 2B, and 4. Employment on the Crow Reservation from Leasing Alternative 2A is projected at 2 direct operations workers and 10 secondary workers in 2005. Of these workers, three secondary workers are projected to be nonlocal, non-Native American workers, while all other workers are projected to be local Native Americans. Employment would begin in 1995 with two nonlocal construction workers residing on the Crow Reservation. The change in on-Reservation employment in the year 2005 under Leasing Alternative 2A represents a 1 percent change above the High Baseline FTE level of 765 on the Reservation. Figure 4-2 at the beginning of this section shows the Crow Reservation.

4.2.2C Population

The development of the three leasing alternatives would have little impact on population on the Crow Reservation. Population growth due to development of projects associated with Leasing Alternative 4 would increase the Reservation population in 2005 by 30 people over the projected High Baseline total of 9,326. This is a less than 1 percent change in total population. Therefore, the population on the Crow Reservation is not expected to be significantly affected by any of the leasing alternatives.

However, the nearby off-Reservation communities of Hardin and Sheridan are expected to see population growth from development of all three leasing alternatives. These increases are not expected to result in significant economic impacts on the Crow Reservation, but they are expected to affect some services on the Reservation and Crow social structure and social well-being. For a discussion of these impacts, see Chapter 4, Sections 4.2.6C to 4.2.8C. Table 4-34 shows the expected population changes to Hardin and Sheridan under each leasing alternative.

TABLE 4-32
CHANGES IN DIRECT EMPLOYMENT[1] — EMPLOYEES RESIDING ON RESERVATION
Crow Reservation

	Construction		Operation		Total	
Year	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
			LEASING ALTERNATIVE 2A			
1990	0	0	0	0	0	0
1995	0	2	0	0	0	2
2000	0	2	2	2	2	4
2005	0	0	2	0	2	0
			LEASING ALTERNATIVE 2B			
1990	0	0	0	0	0	0
1995	0	0	0	0	0	0
2000	0	2	1	1	1	3
2005	0	0	2	0	2	0
			LEASING ALTERNATIVE 4			
1990	0	0	0	0	0	0
1995	0	2	0	0	0	2
2000	2	5	2	1	4	6
2005	0	0	4	3	4	3

[1]Changes measured against High Baseline Alternative. Employment of Reservation residents, jobs would occur off-Reservation at mine sites.

Source: BLM, 1988

TABLE 4-33
EMPLOYMENT OF RESERVATION RESIDENTS[1]
Crow Reservation

Year	Changes Over High Baseline: Indirect Native American	Indirect Non-Native American	Direct Native American	Direct Non-Native American	Totals Native American	Totals Non-Native American	Total Employment[2]	High Baseline Total
LEASING ALTERNATIVE 2A								
1990	0	0	0	0	0	0	752	752
1995	0	0	0	2	0	2	763	761
2000	4	2	2	4	6	6	777	765
2005	7	3	2	0	9	3	777	765
LEASING ALTERNATIVE 2B								
1990	0	0	0	0	0	0	752	752
1995	0	0	0	0	0	0	761	761
2000	3	2	1	3	4	5	774	765
2005	4	2	2	0	6	2	773	765
LEASING ALTERNATIVE 4								
1990	0	0	0	0	0	0	752	752
1995	0	0	0	2	0	2	763	761
2000	9	4	4	6	13	10	788	765
2005	15	5	4	3	19	8	792	765

[1] Employment of Reservation residents. Indirect jobs could occur either on or off-Reservation, direct jobs would occur off-Reservation at mine sites. Direct jobs include construction and operations employment.
[2] Includes High Baseline and leasing alternative employment and represents the cumulative employment impact.

Source: BLM, 1988

TABLE 4-34
POPULATION CHANGE[1] — COMMUNITIES ADJACENT TO CROW RESERVATION

	1990	1995	2000	2005
LEASING ALTERNATIVE 2A				
Hardin	0	5	49	53
Sheridan	0	50	369	403
LEASING ALTERNATIVE 2B				
Hardin	0	0	28	39
Sheridan	0	0	208	265
LEASING ALTERNATIVE 4				
Hardin	0	5	80	104
Sheridan	0	50	612	800

[1]Changes measured against High Baseline Alternative.

Source: BLM, 1988

4.2.3C Income

Household income on the Reservation would increase as a result of employment of Reservation residents under each of the three leasing alternatives. For example, in 2005, household income on the Crow Reservation is forecasted to be $881,000 greater than the High Baseline Alternative level of $37,920,000, representing an approximate 2 percent increase due to Leasing Alternative 4 projects. The change in household income for Leasing Alternative 4 is the largest change over the High Baseline Alternative.

In 2005, business activity for Leasing Alternative 4 is $255,000, or a 2 percent increase over High Baseline levels. The small amount of business activity generated from the increase in household income due to each of the three leasing alternatives illustrates a weak link between the Reservation economy and the economy of the rest of the Montana portion of the Powder River Region. A substantial portion of the household income on the Reservation is spent off the Reservation. Those funds which are spent on the Reservation do not circulate long before flowing off the Reservation. Therefore, off-Reservation development would not have a large impact upon on-Reservation business activity. (See Technical Report 1.)

It can be expected that large scale regional development would lead to increased price levels. Based on studies of development in the past (Feeney, et al., 1986), some evidence indicates that price levels do increase with large regional developments. While the level of price increases are difficult to forecast, it is likely that there would be an increase in prices on the Crow Reservation due to off-Reservation coal development. As prices rise, those households on fixed incomes or whose income does not keep up with increasing price levels, would experience a decline in purchasing power. More Reservation residents are likely to see declines in their standard of living relative to the rest of the region because fewer Reservation residents are

expected to be able to take advantage of employment opportunities related to coal development. Given the distance of the Crow Reservation from the new mine tracts, and the proximity of the Reservation to trade centers such as Billings and Sheridan, the upward pressure on prices is expected to be mild.

In conclusion, while each of the three leasing alternatives results in some increases in household income and business activity, the magnitude of these changes would be small when compared to High Baseline levels. Therefore, changes to household income and business activity from each of the leasing alternatives would not be significant.

4.2.4C Tribal Fiscal Conditions

Revenue

Tribal revenues are not expected to be significantly affected by any of the leasing alternatives. The primary revenue sources of the Tribe are fees from livestock grazing, agricultural lease fees, coal revenues, and federal grants and contracts. The Tribe does not tax persons, income, or property on the Reservation, so any increases in population and income do not lead to an increase in Tribal revenue.

The federal government provides funds for specific Reservation programs or projects such as housing and general assistance. These funds are generally tied to the appropriation process and fluctuate with changes in government priorities.

Additional mining of Crow coal, currently occurring at the Absaloka Mine, could significantly enhance revenues to the Crow Tribe. Because coal mining is an important revenue source to the Tribe, Tribal managers are concerned about possible reductions in Tribal revenues from competition between Crow coal and federal coal from the Powder River Basin. The following impact analysis was done as a result of these concerns which were also raised at the Crow Scoping Meeting.

Several points were considered in reaching a conclusion about possible impacts to Crow coal from leasing of federal coal tracts in Montana. These points are:

1. Crow coal is comparable in quality, quantity, and minability to both federal and fee coal in the Montana portion of the Powder River Region.

2. Recent exemption of the Montana coal severance tax and gross-proceeds tax on Indian coal would provide the Crow Tribe with more flexibility in negotiating coal contracts.

3. There would be significantly fewer miles of railroad construction needed for the development of Crow coal as compared to the Powder River I new mine tracts in Montana (see Map 1). It is expected that development of the 80-mile Tongue River Railroad would be necessary before these Round I tracts could be developed. Development of Crow coal in the Youngs Creek area (southeastern corner of the Crow Reservation) would be favorably situated to existing rail lines, approximately 6 miles away. Additional development in the Crow's "ceded area" (just north of the Crow Reservation) would require only 2 additional miles of rail.

4. Opportunities for development of Crow coal have been at least equal, if not better, to those of federal coal because of three moratoriums on federal coal leasing during the last 17 years. Currently, there is no Powder River II regional coal sale scheduled.

5. Crow coal reserves have been and continue to be available for leasing primarily at the discretion of the Crow Tribe.

Based on these considerations, it is not expected that leasing of Montana's Round I tracts would adversely affect the value of Crow coal. However, Powder River Basin coal coming from northern Wyoming would also be in competition with Crow coal. Coal mining operations in the Gillette, Wyoming area, have certain competitive advantages over coal operations in Montana, including Indian-owned coal. These advantages are:

1. The Wyoming new mine tracts leased at the 1982 Powder River sale, all in the Gillette area, contributed additional productive capacity to an area that currently has over-capacity through the year 2005. This would, if other things were equal, enhance northern Wyoming's ability to supply coal under new contracts.

2. Transportation costs could be more competitive from the Gillette area to eastern and southern markets because of competing railroad companies that serve the Gillette area.

3. Mines in the Gillette area generally have thicker coal seams, less overburden, and lower mining costs.

4. In the past, Wyoming coal severance taxes were less than those on coal in Montana, including Indian coal. That condition no longer is true. Given the recent exclusion of state severance taxes on Indian coal in Montana, it is unlikely that Gillette area coal, which is likely to have severance taxes of some amount, would maintain a tax advantage over Indian coal from Montana.

It is not clear whether these advantages would be offset by the exemption of the Montana severance and gross-proceeds taxes on Indian coal. The number of existing and proposed mines and undeveloped leases in the Gillette area suggest that at least, in the past, this area had the competitive edge for the Midwestern, Front Range, and Gulf Coast markets. The relative competitiveness and marketability of Crow coal versus Gillette area coal, would depend to a great extent on how successful the Crow are at identifying market areas and negotiating new contracts.

With the exception of the proximity of a railroad to Crow coal areas, the same general conclusion made above can be made regarding Northern Cheyenne coal. See Technical Report 5 for a more detailed discussion of the possible impacts to Indian coal.

Expenditures

The off-Reservation population growth would create increased demands on some Reservation services. For discussion of these demands, see Chapter 4, Section 4.2.6C. The impacts to services from the three leasing alternatives are indirect in nature. The level of these demands cannot be quantified and, therefore, expenditures were not calculated for service demands.

In conclusion, the development of any of the three leasing alternatives would have no significant impact on the level of Tribal revenues, while needed increases in expenditures for increased service demands due to each of the three leasing alternatives are expected to be insignificant with the exception of housing, health care, law enforcement, roads, and social services.

4.2.5C Tribal Government

The development associated with the three leasing alternatives would have little impact on the Crow Tribal government. This is because of the distance between the tracts and the Crow Reservation, and the resulting small changes to income, population, and employment to the Reservation from those projects. However, off-Reservation population growth could increase the pressure on Tribal government to provide higher levels of some services and to deal with problems concerning Crow Tribal members in the communities surrounding the Reservation.

4.2.6C Housing, Services, Infrastructure

This section describes the impacts to housing, services, and infrastructure on the Crow Reservation due to changes associated with each of the three leasing alternatives. Because on-Reservation population growth for each of the leasing alternatives is expected to be insignificant (less than 1 percent over the High Baseline population by 2005), impacts to housing, services, and infrastructure would not occur directly as a result of on-Reservation population growth. However, there would be impacts to the Crow Reservation caused by growth in communities adjacent to the Reservation and by increased traffic across the Reservation due to leasing alternative projects. A high level of concern was expressed at the Crow Scoping Meeting (BLM, 1987), and at individual interviews on the Reservation, regarding the possible impacts to Reservation service provision from regional coal development.

The beginning date of construction for each of the leasing alternatives is shown in Table 4-14. Full production at all mines, and consequently maximum impact to services and infrastructure, would occur in 2004 for all three leasing alternatives and continue for approximately 40 years. This section discusses expected impacts to the various services from the three leasing alternatives.

Housing

Population growth in the off-Reservation community of Hardin due to each of the three leasing alternatives could increase the demand for rental housing in the Hardin area. If rental housing prices increase there, some Native Americans currently living in the Hardin area may be forced to return to the Crow Reservation to reside with friends and/or relatives. This would exacerbate crowded housing problems which are currently (1987) severe and are expected to remain severe under High Baseline conditions. Growth in Hardin is projected to be low; increases of 1, 1, and 3 percent over the High Baseline level by the year 2005 are expected from Leasing Alternatives 2A, 2B, and 4, respectively. Mild impact to Reservation housing is expected under Leasing Alternative 4. The impacts would be insignificant for Leasing Alternatives 2A and 2B.

Water, Sewer, and Solid Waste

There would be no significant impact to water, sewer, and solid waste services on the Crow Reservation from any of the three leasing alternatives.

Education

Schools located on the Reservation are not discussed here because they are not expected to be affected by the implementation of any of the three leasing alternatives. However, population inmigration in the Hardin area, due to the three leasing alternative projects, could cause changes in the off-Reservation Hardin schools that are attended by a large number of Reservation students. Under Leasing Alternative 4, approximately 40 additional students (an increase of 3 percent) over High Baseline levels are expected to attend Hardin schools in the year 2005. That number would be 20 and 15 for Leasing Alternatives 2A and 2B, respectively. These students would be the dependents of inmigrating workers. The addition of these new students from outside the community could exacerbate problems between Native Americans and non-Native Americans that already exist in these schools. Also, these schools are reportedly unprepared to deal with alcohol and drug problems and problems of understanding between cultures; both of these difficulties may increase with the addition of students from outside the area. Mild impacts to Reservation students are expected from Leasing Alternative 4; impacts are expected to be insignificant from Leasing Alternatives 2A and 2B.

Health Care

Implementation of each of the three leasing alternatives would have a variety of impacts on the Reservation health care delivery system. There would be higher demands for emergency medical services, ambulance services, and CHS due to increases in road use and accidents. On-Reservation drug and alcohol abuse could increase as a result of regional population growth. This would not only generate an increased demand for addiction treatment, but would be associated with increases in alcohol-related diseases, accidents, suicides, and other violent behavior, all of which would place additional demands on health care service.

Population growth of Native Americans on the Northern Cheyenne Reservation resulting from the leasing alternatives would put pressure on the Crow Agency Hospital to handle outpatient overflow from the Lame Deer clinic. This would exacerbate an already crowded Crow Agency Hospital situation. In addition, major medical care for the Northern Cheyenne Reservation is provided by the Crow Agency Hospital. By 2005, the Crow Agency Hospital would need an additional bed under each of the three leasing alternatives to handle the caseload increase from the Northern Cheyenne Native American population. This figure is in addition to a baseline demand of 15 additional hospital beds (half of which would have to be provided at Crow Agency Hospital, see Technical Report 3) by 2005.

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned at the Crow Scoping Meeting and in individual interviews on the Reservation. Impacts to the health care system are expected to be mild under each of the leasing alternatives. This would be due, in part, to the significant increases in Native American population projected for the Northern Cheyenne Reservation (7, 6, and 9 percent over High Baseline figures for Leasing Alternatives 2A, 2B, and 4, respectively) which would create increased demand for medical services on the Crow Reservation. Impacts to Reservation health care from Leasing Alternatives 2A and 2B would be similar, but smaller in magnitude, than for Leasing Alternative 4. The cumulative impacts of any of the leasing alternatives, when combined with the High Baseline, would be severe.

Law Enforcement

Implementation of each of the three leasing alternatives could have a variety of impacts on Reservation law enforcement. The police may need to respond to more traffic accidents due to increased Reservation traffic; more crime associated with increases in alcohol and drug abuse; more trespassing due to regional population growth, and more disputes involving Native Americans and non-Native Americans. The Tribal Court system would likely see an increase in cases, particularly those involving credit transactions, business transactions and alcohol and drug-related offenses. The problems associated with legal multiple jurisdictions (see Chapter 3, Section 3.6.C) would further complicate the situation. Problems with law enforcement and multiple jurisdictions are of particular concern to Reservation members and were mentioned frequently at the scoping meetings and during individual interviews.

Mild impacts to law enforcement on the Reservation from each of the three leasing alternatives are expected because of the variety of problems, and difficulty in dealing with the problems, given jurisdictional issues. Impacts to law enforcement under Leasing Alternative 2A and 2B would be similar, but smaller in magnitude, than impacts from Leasing Alternative 4. The cumulative impacts of any of the leasing alternatives, when combined with the High Baseline, would be severe.

Fire Protection

The increase in automobile traffic, and possible increases in coal train traffic and trespass on the Reservation, could cause more range and forest fires. If a significant increase occurred in the number of fires, firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these impacts is unknown.

Roads and Railroads

Reservation roads would be affected under each of the three leasing alternatives. Under Leasing Alternative 4, traffic on Interstate 90, from the northern border of the Reservation to the junction with U.S. 212, would rise 7 percent (326 daily trips) over High Baseline levels and 12 percent when combined with High Baseline changes above current (1984 to 1986 average) levels by 2005 (Figure 4-2). These figures for both Leasing Alternatives 2A and 2B, would be 3 percent (125 to 136 daily trips) over High Baseline levels and 8 percent when combined with High Baseline changes over current levels by 2005. During the same time period, under Leasing Alternative 4, traffic on U.S. 212 would increase 24 percent (330 daily trips) over High Baseline levels and increase 51 percent when combined with High Baseline changes above current levels. Again, for both Leasing Alternatives 2A and 2B, the figures would be approximately 9 to 10 percent (126 to 137 daily trips) above High Baseline levels and 27 to 28 percent when combined with High Baseline changes above current levels. These estimates are based on increases in direct mine construction and operation commuter traffic. There would be additional traffic from indirect employment and increases in reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to coal mines and increased regional business activity would also rise. However, these types of increases are very difficult to quantify.

Concerns regarding Reservation roads, particularly increases in truck traffic, were expressed at the Crow Scoping Meeting (BLM, 1987) and frequently during individual interviews. Impacts to roads would be mild to moderate for Leasing Alternative 4 and mild for Leasing Alternatives 2A and 2B due to the increased traffic and because part of U.S. 212 is currently (1987) in need of repair. These traffic increases would cause higher maintenance costs and more accidents. Use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents could also increase. The cumulative impacts to roads, when any of the leasing alternatives is combined with the High Baseline, would be moderate to severe.

Increases in rail traffic over existing rail lines could cause more accidents and fires along the rail beds. Changes in rail traffic due to hauling coal depend on where the coal is being transported. Because of the difficulty in predicting the location of future coal purchases, the level of significance of these impacts is unknown.

Recreation

Under each of the three leasing alternatives, regional population increases could lead to higher usage of recreation areas on the Reservation, such as the Big Horn River for fishing. Also, there could be increases in poaching, littering, trespassing, and conflicts over recreation resources and facility use. These changes would cause insignificant or mild impacts to Crow Reservation recreation.

Social Services

The changes in social organization and social well-being (including increased drug and alcohol abuse) could lead to more unemployment and family stress (which could create problems such as proverty and child neglect). This, in time, could result in an increased demand for social services, such as child protective services and general assistance. Increases in income that would occur if employment was obtained by Native Americans would decrease the demand for general assistance; however, these increases are expected to be very small. Impacts to social services were frequently mentioned concerns at the Crow Scoping Meeting (BLM, 1987) and in individual interviews on the Reservation. Mild impacts to social services are expected from each of the three leasing alternatives. Impacts from Leasing Alternative 2A would be similar to 2B; impacts from either would be smaller in magnitude than those for Leasing Alternative 4.

Other Services

Regional population growth, as a result of each of the three leasing alternatives, could lead to increasing pressures on a variety of other services, such as Little Big Horn Community College. Little Big Horn Community College may see an increase in non-Native American students from off-Reservation communities such as Hardin, but would receive no funding from the state or federal government for these students. These changes would cause insignificant or mild impacts to Little Big Horn Community College.

4.2.7C Social Organization

Community social organization refers to the structures and processes that organize how people in a community relate to one another. *The Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity, outside ties, distribution of resources/power, coordination and cooperation among people in the community, and patterns of personal interaction. These characteristics are used below to discuss impacts to social organization. See Technical Report 6 for a discussion of how this section was developed.

Changes in social organization would occur on the Crow Reservation under each of the three leasing alternatives because of the following factors: (1) migration of non-Native Americans onto the Reservation, (2) coal-related population increases in areas directly adjacent to the Reservation (e.g., the populations of Hardin, Montana, and Sheridan, Wyoming, can be used as an indicator), (3) Native Americans, both inmigrating and current residents, would obtain direct and indirect employment in the coal mine industry resulting in an increased annual payroll to Reservation Native Americans, (4) regional population growth in areas, such as Broadus, Miles City, Colstrip, Forsyth, Ashland, and Billings, that are not directly adjacent to the Reservation but, nevertheless, would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for such activities as school, recreation, and shopping, and (5) changes in social well-being (see Chapter 4, Section 4.2.8C). Table 4-35 shows, by leasing alternative, the relative changes in these impact factors in the year 2005. Mild to moderate impacts to social organization are expected from Leasing Alternative 4; impacts from Leasing Alternatives 2A and 2B would be mild.

Greater contact with non-Native Americans would increase the diversity of ideas, values, and behaviors on the Reservation. These contacts could also heighten conflicts between Native Americans and non-Native Americans, in schools and recreation settings, for example, and cause more individual negative behaviors among Native Americans, such as alcohol and drug abuse. Although Tribal identity is expected to remain strong, increasing exposure to non-Crow ideas could cause cultural conflicts that result in problems for some individuals. Already existing conflicts among Crow groups on the Reservation may be exacerbated by development, making it harder to achieve coordination and cooperation among Tribal members.

Changes in the importance of kinship ties and sharing patterns may be slightly accelerated with the increased exposure to White society, resulting in less importance tied to these values. However, these sharing patterns would still act, to some degree, to redistribute the income received by individuals who obtain employment to a greater number of people.

4.2.8C Social Well-Being

Under each of the three leasing alternatives, impacts to social well-being would occur due to changes in availability of services and facilities; changes in employment and business activity; stress caused by changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. Concerns regarding social well-being were frequently mentioned at the Crow Scoping Meeting and in individual interviews on the Reservation.

Stress on services and facilities are expected to be mild to moderate depending on the service and the alternative. Increases in social well-being would occur to those who were able to obtain employment or benefit from business

TABLE 4-35
CHANGES [1] IN IMPACT FACTORS — SOCIAL ORGANIZATION
Crow Reservation
2005

Factors	High Baseline Alternative	Leasing Alternative 2A	Leasing Alternative 2B	Leasing Alternative 4
Inmigration of Non-Native Americans	6	9	6	22
Off-Reservation Population				
Hardin (1987 population = 3,535)	365	53	39	107
Percent change	10%	1%	1%	3%
Sheridan (1987 population = 17,334)	7,988	403	265	800
Percent change	46%	2%	1%	3%
Change in direct and indirect Native American Employment	11	9	6	19
Total annual associated payroll for Native Americans	$233,150	$186,600	$132,900	$343,500
Level of impact to Reservation roads	Moderate	Mild	Mild	Mild to Moderate
Level of impact to social well-being	Moderate	Mild	Mild	Mild to moderate

[1] High Baseline figures are for 2005 measured against 1987; Leasing Alternative figures are for 2005 measured against the High Baseline.

Note: Cumulative impacts can be obtained by adding leasing alternative and High Baseline Alternative numbers together.

Source: BLM, 1987

expansion as a result of the increased income on the Reservation. Greater stress on individuals, due to changes in Reservation cultural conditions and social organization, and conflicts among Native Americans on the Reservation and with non-Native Americans, both on and off the Reservation, could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Social conflicts and the perception that the Crow would not share in the benefits of coal development could lead to more crimes against people and property. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, child neglect, suicides and other violent behaviors, accidents, and crime. There is also concern that alcoholism and drug abuse make it difficult to practice the traditional culture. In addition, access to alcohol and drugs could increase with the population growth in adjacent communities, such as Sheridan and Hardin.

There may be an increase in feelings of a local loss or lack of control because the decisions regarding coal development are made off-Reservation. Many individuals on the Reservation are very concerned about federal coal decisions because they feel these decisions would affect the Crow's ability to lease Tribal coal (see Chapter 3, Section 3.10.C). It is likely that, as a whole, Crow Tribal members would feel less well-off after regional coal development. Residents may perceive that they do not benefit from off-Reservation coal development and that off-Reservation coal competes directly with Tribally owned coal, preventing it from being developed.

Mild impacts to social well-being are expected for Leasing Alternatives 2A and 2B; mild to moderate impacts are expected for Leasing Alternative 4. See Technical Report 6 for a discussion of how this section was developed. See Chapter 4, Section 4.2.9C for related information on impacts to culture under the three leasing alternatives.

4.2.9C Cultural Conditions

Development of the new mine tracts and the expansion/extension tracts associated with Powder River I federal leasing would change the *baxpe* qualities of the environment; it is not clear what exactly happens to the spiritual aspects of the altered terrain. The landscape would be modified, thereby reducing its beauty and changing the distribution of plant and animal species which provide the Crow with a major source of inspiration and knowledge. Some traditionalist Crow regard reclamation as respectful behavior toward the Earth Clan, but others do not (Deaver, 1988). Some of the high places in the Wolf Mountains that the Crow use for fasting, making offerings, and communicating with the Without Fires would be disturbed by air pollution, noise and increased human traffic. The privacy and seclusion of the area would be reduced.

Changes in the distribution of eagles, hawks, and falcons ("those that whistle") would modify the Crow's access to the feathers of these species, which are important ritual items. This change in distribution and, hence, access to

these species may reduce access to particular ritual items or may require change in acquisition patterns; e.g., seeking out new collecting areas.

Other impacts of each of the three leasing alternatives include the potential damage to archaeological sites with *baxpe* attributes and/or ethnic significance. Site types of particular concern are burials, fasting sites (prehistoric, historic, and modern), rock art sites, Sun Dance localities, sweat lodges, offering sites, Medicine Wheels, and tipi ring sites. Any expansions in the Youngs Creek, Spring Creek areas; i.e., the Spring Creek, North Decker and West Decker expansion/extension tracts, would affect significant archaeological and historic properties which have ethnic and possibly religious significance for the Crow.

According to the Assistant Tribal Manager, leasing of federal coal in the Powder River area of southeastern Montana would reduce the value of Crow coal. This would limit the Crow's ability to make money from their coal and would cause some Crow to sell their lands to make enough money to live. This would accelerate the loss of the Tribal land base and, hence, would weaken the ethnic identity of the Crow.

Continuing coal development in southeastern Montana would increase the regional non-Native American population density and reduce the physical and social isolation of the Crow. Traditionalists among the Crow see this as a negative effect because this would limit their ability to withdraw both socially and physically in order to conduct religious ceremonies requiring privacy. In addition, on the basis of past experience with development projects such as Yellowtail Dam, they assume it would bring with it a host of social problems: increasing discrimination and prejudice, crime, more traffic and traffic accidents, increased vandalism to cultural sites, loss of isolation for private ceremonial activities, and, an increase in jurisdictional disputes among various levels of government (county, state, federal, Tribal). In general, children would be introduced to many undesirable things. Increasing contact with the dominant society is particularly feared in terms of language loss. Crow values and beliefs are embedded in the Crow language, and traditionalists regard the ability to speak Crow as critical to their beliefs and ethnic identity. Increasing non-Native American population density could put more pressure on schools to not teach Crow and could deemphasize nativist values. This would have a negative impact on the Crow's ability to pass on their culture to their children.

Moderate impacts to Crow cultural conditions would occur under each of the three leasing alternatives.

4.3 MITIGATION

Introduction

This section describes possible options for reducing or eliminating impacts that would result from the leasing of Powder River I federal coal under three leasing alternatives. The impacts from the three federal leasing alternatives are described in Chapters 4 and 4A of this Supplement for both the Northern Cheyenne and Crow Tribes; this mitigation section applies to both impact chapters.

Historically, funds available to mitigate impacts from coal development in Montana have come from two major sources, federal mineral royalty payments to the State of Montana and a portion of the state coal severance tax which is set aside for local impact assistance. In the past, the state's share of federal royalties was used to fund highway construction and education programs; it is currently all used to fund schools through the Montana School Foundation Program. Local impact assistance from coal severance tax funds is administered by the Montana Coal Board which provides grants for capital improvements in affected communities which apply for grants. Table 4-36 shows the forecasted federal coal royalties and Montana coal severance taxes that would be available for each of the three leasing alternatives.

Mitigation of the impacts described in Chapters 4 and 4A of this Supplement could require action, individually or collectively, by the U.S. Department of the Interior (BIA and BLM), the Powder River Regional Coal Team (RCT), Northern Cheyenne Tribe, Crow Tribe, state and local government, and energy companies, among others. The Secretary of the Interior does not have authority to implement all of the mitigation options described in this section. The Secretary does, however, have direct authority over both the BIA and the BLM, through which many of the mitigation options could be implemented. The BLM is the federal agency responsible for leasing of federal minerals. The BIA is responsible for administering the Department's programs on Indian Reservations and in assisting Indian Tribes in the administration of their resources. As such, the BIA currently represents the Department's major effort at discharging the Secretary's trust responsibility toward Indian Tribes in the United States.

The mitigation options described in this section were developed through a series of meetings with various groups and individuals, including the Crow Tribe, Northern Cheyenne Tribe, State of Montana, and BIA. This mix of interested parties and complex issues requires a clearly delineated mitigation approach that discusses mitigation options, and potential effectiveness of the options. Section 4.31, "Mitigation by Objective," provides this information. Section 4.32 summarizes and discusses proposed mitigating measures that were received in 1983 from the Northern Cheyenne Tribe; these measures were included by BLM in the 1984 Draft Powder River II EIS. (Appendix C-1 presents the full text of the proposed Northern Cheyenne mitigation measures.)

TABLE 4-36
FORECASTED MONTANA COAL SEVERENCE TAXES AND FEDERAL COAL ROYALTIES [1]

	Total Annual Tonnage (Million tons)	Annual Federal Tonnage (Million tons)	Amount of Federal Royalties	Annual Federal Royalties to State	Annual State Severance Tax[2]	State Severance Available to Indian Tribes [3]
Leasing Alternative 2A	37.0	15.6	$19,500,000	$9,750,000	$43,845,000	$204,000
Leasing Alternative 2B	30.6	11.2	14,000,000	7,000,000	36,261,000	169,000
Leasing Alternative 4	56.1	21.8	27,250,000	13,625,000	66,479,000	309,000

[1] New mine and expansion/extension tracts, dollar values in 1988 dollars.
[2] Assumes 15% severence tax rate.
[3] Assumes 6.65% of severence tax available for local impact aid and 7% of local impact aid available for Indian Tribes in competition with state agencies on an application/grant basis.

Source: BLM, 1988.

4.31 Mitigation by Objective

This section discusses mitigation options for reducing or eliminating impacts from leasing of Powder River I federal coal under the three leasing alternatives. The Mitigation Objective headings relate directly to the nine impact sections for each Tribe that are contained in Chapters 4 and 4A: (1) employment, (2) population, (3) income, (4) Tribal revenue, (5) Tribal government, (6) housing, services, infrastructure, (7) social organization, (8) social well-being, and (9) cultural conditions (belief and value systems). Each heading is followed by a short impact summary that sets the stage for the "Mitigation Options" which follow each summary. This column describes the action necessary for mitigation to occur. The "Potential Effectiveness" column provides subjective ratings of High, Moderate, or Low for each mitigation option and a brief discussion of the reasons(s) for that rating. The effectiveness ratings were developed using a consensus approach among staff experts. The ratings reflect the assumption that the mitigation option is actually implemented, regardless of whether it is required or voluntary.

OBJECTIVE 1: IMPROVE EMPLOYMENT OF NATIVE AMERICANS

The following five mitigation options would improve employment opportunities for both the Northern Cheyenne and Crow during the development of Powder River I federal coal leases. Inability to obtain employment has contributed to a high dropout rate in Reservation schools and to high rates of alcoholism. Most Crow and Northern Cheyenne leaders and private individuals that were contacted in the course of this Supplemental EIS cited the lack of employment opportunities as the single biggest problem in Native American life today.

Mitigation Options	*Potential Effectiveness*
A. Initiate a program to clarify hiring policies on the Powder River I tracts. This information could then be used to implement a vocational education program that coincides with coal industry hiring practices and needs.	In the short term, the effectiveness of this mitigation option would be Low because of the lead time necessary in setting up a program of this type. In the long term, the effectiveness would be Low to Moderate since completion of a program does not guarantee employment in the coal industry. This mitigation measure would be somewhat less effective than Mitigation Option 1B.
B. Develop an Apprentice Training Program as a "foot in the door" training approach for unskilled workers. Successful participants could be given first consideration at the mines for new entry level jobs requiring skills in their area of expertise. Participants could be paid a subsistence stipend for successful monthly performance while in "apprentice" status. The program could be developed with union input so that the training would comply with union apprenticeship certification requirements.	This measure would have Low effectiveness in the short term due to the lead time in starting this program. In the long term, this option could provide more skilled Native American workers to the local work force with at least the first steps completed toward union certification. The long run effectiveness of this measure would be Moderate because other union rules such as seniority and rating systems could limit the number of available positions.
C. Develop a coordinated Employment Awareness Program in Reservation schools that emphasizes employment opportunities in the coal industry and the associated educational/training requirements and opportunities.	This option would have Low effectiveness in the short run, due to the lead time required to set up the program and for students to receive the necessary training to qualify for employment in coal mining and related industry. In the long run, this option would be of Low to Moderate effectiveness. This option may not be as effective as Options 1A and 1B because it relates to present and future job awareness rather than offer training programs which are directed at specific jobs in the coal mining and related industries.
D. The Northern Cheyenne have proposed that a federal lease stipulation on preferential hiring of Northern Cheyenne be attached to those Powder River tracts within 25 miles of the Northern Cheyenne Reservation. (See Northern Cheyenne Proposal No. 1 in Section 4.32 for greater detail.) A voluntary measure that results in preferential hiring of Native Americans by the successful lessees is also possible.	The effectiveness of this option would be High because it would immediately put a number of Northern Cheyenne and/or Crow Tribal members to work in coal mining. This in turn would increase the level of household income on the Reservation and improve the social well-being of a large portion of the Reservation population. See Appendix C-3 for quantification of some of the possible effects from implementing this measure.

Mitigation Options	*Potential Effectiveness*
E. The Northern Cheyenne have proposed that a federal lease stipulation on preferential contracting with Northern Cheyenne businesses be attached to those Powder River Basin tracts within 25 miles of the Northern Cheyenne Reservation. Under this proposal, successful lessees would contract with Northern Cheyenne businesses that are Tribally-owned or owned by Tribal members. (See Northern Cheyenne Proposal No. 2 in Section 4.32 for greater detail.) A voluntary measure by successful lessees that results in preferential contracting with Native Americans is also possible.	For expansion/extension tracts, this option would have Low effectiveness since little contracting is involved in development of these tracts. For new mine tracts in the short run, the effectiveness of this option would be Low to each of the Reservations as a whole. This is because there is a small number of businesses on each Reservation that could take advantage of contracting opportunities. In the long run, development of new businesses on the Reservation could make the effectiveness of this option Low to Moderate in increasing employment, household income, and business volume on each Reservation. Although more businesses could take advantage of contracting opportunities, the amount of contracting done during the operations phase is limited. See Appendix C-3 for quantification of some of the possible effects from implementing this measure.

OBJECTIVE 2: REDUCE POPULATION INFLUX

A large part of the impacts to Northern Cheyenne services (e.g., housing, education, health care, roads, water and sewer, social services) would result from Northern Cheyenne returning to the Reservation in the hopes of obtaining employment associated with federal coal development. In addition, a population influx of non-Native Americans both on- and off-Reservation would create impacts on roads, law enforcement, emergency medical care, social organization, and social well-being to both Reservations. Return-migration is not expected to be a significant impact on the Crow Reservation.

Mitigation Options	*Potential Effectiveness*
A. Implement steps to reduce population influx both on and off the Reservations. Specific items could include phased development of federal tracts so that development schedules are staggered (i.e., spread out), resulting in a lower peak development work force in the area. Hiring of local workers would also reduce the population influx that would occur if non-local workers were hired.	This mitigation option would have Moderate effectiveness in reducing the population influx during the construction phase on new mine tracts. The construction phase offers more opportunities for hiring local workers because of the variety of skills needed. In addition, the construction phase is short term, so employment peaks can be evened out by staggering development schedules. For the operations phase, the effectiveness of this mitigation option would be Low. The opportunity to stagger scheduling during the operations phase does not exist since each mine would need a long-term, stable work force.
B. Develop a process to determine the successful lessees' hiring policies regarding Native Americans. This could then be provided to Tribal leaders/councils and the Tribe could notify its off-Reservation members regarding employment opportunities. In addition, the successful lessees' policies on hiring practices could be made available for monitoring purposes (see Option 6A).	The effectiveness of this option would be Low to Moderate because it is likely that some return-migration would occur in spite of better employment information. This option deals only indirectly with return migration by providing information to off-Reservation Native Americans concerning possible employment opportunities. It is uncertain how that information would be used by off-Reservation members.

OBJECTIVE 3: INCREASE NATIVE AMERICAN INCOME

Per capita annual income on both the Crow and Northern Cheyenne Reservations is significantly below that for the state average. This is a direct consequence of the lack of employment opportunities that exist on both Reservations. The mitigation options discussed under *OBJECTIVE 1: IMPROVE EMPLOYMENT OF NATIVE AMERICANS* apply equally well to this objective. This option would address historic problems, as well as the impacts from Round I leasing.

OBJECTIVE 4: INCREASE TRIBAL REVENUES

The Northern Cheyenne Tribe would be faced with increased demands for Tribal services as a result of impacts from population growth associated with Powder River I federal coal development. The Tribe must have the necessary revenue

source(s) if it is to respond to these demands in an effective manner. Recent declines in Tribal revenue are expected to continue, at least in the near term. It is not likely that Northern Cheyenne coal values would be affected by leasing of federal coal tracts in the Montana portion of the Powder River coal region although that conclusion is not certain given the large number of variables associated with the coal value issue. (See Technical Report 5 for greater detail.)

Impacts on services are expected to be mild on the Crow Reservation. The current Crow administration is concerned about the possible impact on Crow coal values from Powder River federal coal leasing. It is not likely that Crow coal values would be affected by leasing of federal coal tracts in the Montana portion of the Powder River Basin although that conclusion is not certain given the large number of variables associated with the coal value issue. (See Technical Report 5 for greater detail.)

Mitigation Options	***Potential Effectiveness***
A. Identify markets for Tribal resources and obtain federal/state funding to assist in implementing the marketing of Tribal resources.	The effectiveness of this mitigation option in increasing Tribal revenue is Low to Moderate because this option does not directly lead to an increase in revenue. Identification of markets and use of improved marketing would not guarantee that Tribal revenues would improve significantly. This option would address historic problems, as well as the impacts from Round I leasing.
B. Increase Tribal emphasis on applying for Montana Coal Board Impact Assistance grants. Increase the percentage of Impact Assistance Monies that Indian Tribes can apply for.	The effectiveness of this option for individual, specific projects without a change in the current law would be Low because of the limited amount of funds currently available for Indian Tribes from the local impact assistance fund. If the State of Montana increased the percentage of local impact funds available to Indian Tribes, the effectiveness for individual, specific projects would, at a maximum, be Moderate, given the limited funds available for local impact aid as a whole.
C. Recommend special legislation whereby U.S. Congress would provide a portion of the federal mineral royalty monies directly to the Tribes based on a threshold level of impacts. The Socioeconomic Impact Monitoring Program (Mitigation Option 6A) could provide early identification of the impact thresholds.	The effectiveness of this mitigation option would be High because it would provide the affected Tribes with a stable source of funds to meet increased service demands on the Reservation. See Appendix C-3 for quantification of some of the possible effects from implementing this measure.
D. The Northern Cheyenne have proposed that stipulations on direct impact assistance be attached to those federal leases in the Powder River Basin within 25 miles of the Northern Cheyenne Reservation. (See Northern Cheyenne Proposal No. 4 in Section 4.32 for greater detail.)	The effectiveness of this option would be High because it would directly lead to annual funding for mitigation of service-related impacts. See Appendix C-3 for quantification of some of the possible results of implementing this measure. This option would address historic problems, as well as the impacts from Round I leasing.
E. Presentation, by both Tribes, of Tribal coal development plans to the Powder River Regional Coal Team (RCT). This would allow explicit recognition of Indian coal development plans via the established RCT process in setting regional leasing targets. Doing so could reduce potential competition between federal and Indian coal and increase the revenue/development possibilities of Indian coal. The Crow Tribe could request to become an ex officio member of the Powder River RCT. The Northern Cheyenne Tribe is currently an active ex officio member.	The effectiveness of this option would be Low in the short run because it would not increase revenue to the Tribe, although it would reduce the possibility that federal coal and Northern Cheyenne and/or Crow coal would compete for the same markets. In order to benefit from this option, the Tribes would have to successfully market and/or develop their coal to obtain greater Tribal revenue. Effectiveness could be Moderate to High in the long run if markets improve and Indian coal can be marketed without competing with federal coal. This option would address historic problems, as well as the impacts from Round I leasing.

Mitigation Options	*Potential Effectiveness*
F. The Northern Cheyenne have proposed that a stipulation concerning preferential contracting be attached to those federal leases in the Powder River Basin within 25 miles of the Reservation. (See Northern Cheyenne Proposal No. 2 in Section 4.32 for greater detail.) A voluntary program by successful lessees to contract with Native American businesses is also possible.	The effectiveness of this option in providing increased employment and household income is discussed under Mitigation Option 1E. The effectiveness of this option in providing additional revenue to the Tribe is, at best, Low to Moderate even if the Tribe is directly involved in the formation and operation of new companies that could bid on these contracts. This is because mining companies do not normally contract significant activities in the local area, particularly during the operations phase. If the Tribal government is not directly involved in the formation of contracting companies, the effectiveness of this option in providing additional revenue directly to the Tribe would be Low. Since coal companies do only limited contracting during the long-term operations phase, the level of contracting dollars would be limited over the long run. See Appendix C-3 for quantification of some of the results of implementing this measure.

OBJECTIVE 5: IMPROVE EFFECTIVENESS OF TRIBAL GOVERNMENT

Northern Cheyenne Tribal government would be affected by Powder River I federal coal development. These impacts would occur as a result of increased jurisdictional disputes over law enforcement, increased demands for Tribal services in the face of declining Tribal revenues, and a generally more complex working environment for Tribal council members as a result of greater needed interaction with off-Reservation entities. These would not be significant impacts on the Crow Reservation.

Mitigation Options	*Potential Effectiveness*
A. Develop better feedback to Tribal members regarding Tribal Council meetings, decisions and issues (current and future). This could be developed by a coordinator through a newsletter approach with BIA assistance to on- and off-Reservation members. It also could include information on coal company activities (see Mitigation Option 5C).	The effectiveness of this option would be Low in the short term because the Tribal Council and Tribal members would need time to adjust to this means of feedback. The effectiveness of this option in the long term is Low to Moderate because this option offers the opportunity (it does not guarantee the implementation) for better interaction between Tribal members and the Tribal government. This option would address historic problems, as well as the impacts from Round I leasing.
B. The Northern Cheyenne have proposed that a stipulation concerning law and order be attached to those federal leases in the Powder River Basin within 25 miles of the Reservation. This would require successful lessees to obtain a written covenant that its employees would, while on the Reservation, comply with standards of conduct applicable to Tribal members. This could reduce the number of law enforcement/jurisdictional disputes that Tribal government would have to deal with. (See Northern Cheyenne Proposal No. 3 in Section 4.32 for greater detail.) This option would also apply to that portion of *OBJECTIVE 6: INCREASE SERVICE/INFRASTRUCTURE CAPACITY* that pertains to law enforcement. A voluntary measure by the successful lessees is also possible.	The effectiveness of this option would be Low to Moderate because it would affect the conduct of only a portion of the people on the Reservation. Another reason for this effectiveness rating is that it is uncertain how rigorously and to what extent the covenant could be enforced.

Mitigation Options	*Potential Effectiveness*
C. Develop an information program whereby the successful lessees' public affairs officers issue news releases directly to the Northern Cheyenne and Crow Tribes. These would describe upcoming activities such as increased traffic associated with moving a dragline, hiring activity, construction activity updates, among others. The public affairs officer could be available to answer questions and provide information to, or meet with, Tribal Councils if requested. Tribal Councils could ensure that information is disseminated to Tribal members in a timely manner.	The effectiveness of this option would be Low in the short term as the Tribes develop processes to use the information provided. The effectiveness in the long term would be Low to Moderate because this option provides the opportunity (it does not guarantee the implementation) for Tribal government to provide information to Tribal members and, therefore, improve the interaction between the Tribal government, Tribal members, and lessees. As an additional benefit, this option could improve relations between the Tribal government and the lessees.

OBJECTIVE 6: INCREASE SERVICE/INFRASTRUCTURE CAPACITY

The Northern Cheyenne Tribe would experience moderate to severe impacts to most of its on-Reservation services as a result of population growth associated with Powder River I federal coal development. The demands for increased services from this development would be much lower on the Crow Reservation.

Mitigation Options	*Potential Effectiveness*
A. Develop a Socioeconomic Impact Monitoring Program that would monitor growth attributable to Powder River federal coal leasing and identify impact thresholds before they occur. A Monitoring Program would allow mitigation options (i.e., activities) such as needed funding, personnel, or additional information to be made available at the time they are most needed and for the appropriate duration. An on- and off-Reservation Monitoring Program of this sort could also help to identify impacts to communities adjacent to the Reservation (such as Ashland) before these impacts spill over onto the Reservation. A Monitoring Program should become operational before lease development begins so that the impact/growth tracking system could be developed and refined as far as major participants and reporting procedures are concerned. This would also allow the program to alleviate the effects of potential impacts before they occur and to document the mitigation process so that the various participants can work together to assess needs, make mitigation recommendations, implement mitigation, and monitor the results of the mitigation. Many of the mitigation options discussed in this section of the Supplement could be implemented, tracked, and modified (if necessary) through a program of this sort.	The effectiveness of this option would be Moderate to High because it would bring together the partipipants involved in impact mitigation, and identify when, where, and what types of actions would be needed to prevent or alleviate impacts. The program would be most effective if it is in place as lease development begins. The success of the program would depend, in part, upon the participants working together long enough to establish good working relationships, as well as being able to obtain adequate information and to identify sufficient funding sources.
B. Hire a coordinator to plan for, coordinate, and monitor Reservation service/infrastructure provision. This coordinator could identify service needs associated with Powder River I federal coal leasing and work through an Impact Monitoring Program (see Option 6A).	The effectiveness of this option would be Moderate to High because the coordinator could develop a familiarity with all the service/infrastructure programs and funding sources on the Reservation, and help to ensure that decisions/expenditures would be made in the most effective manner. This option would address historic problems, as well as the impacts from Round I leasing.
C. Anticipate the increased demand on Busby School resulting from Powder River I federal coal development, and provide adequate funding so that state standards are met.	The effectiveness of this option would be High because adequate school space and teachers would be provided. This option would allow Native American students to receive an adequate education without leaving the Reservation. In the long term, improvements in education could enhance the employability of Reservation students.

Mitigation Options	*Potential Effectiveness*
D. Anticipate the increased demand on Lame Deer Elementary School resulting from Powder River I federal coal development, and provide adequate funding so that state standards are met.	The effectiveness of this option would be High because it would alleviate impacts to Lame Deer Elementary School by providing adequate school space and teachers. In the long term, improvements in education could enhance the employability of Reservation students.
E. Increase the emphasis on Native American history, language, culture, and government in the Colstrip curriculum. Hire more Native American teachers and administrators, and provide for better Native American representation on the Colstrip School Board. Colstrip currently has a significant number of Native American students for whom the school receives federal funding. This suggestion would also apply to any future school built in the Ashland area as a result of population growth associated with Powder River I coal development and to the Hardin schools in terms of the Crow Tribe.	The effectiveness of this option would be Moderate to High at addressing the problems associated with Native American attendance at off-Reservation schools because Native American cultural course work could be introduced and Native American teachers could be hired as role models. In addition, increased parental involvement would be available through Native American representation on the Colstrip School Board. This option would enable Northern Cheyenne children to learn about their traditional culture while attending integrated schools. This option would address historic problems, as well as the impacts from Round I leasing.
F. The Northern Cheyenne have proposed that stipulations on direct impact assistance be attached to those federal leases in the Powder River Basin within 25 miles of the Northern Cheyenne Reservation. (See Northern Cheyenne Proposal No. 4 in Section 4.32 for greater detail.)	The effectiveness of this option would be High because it would directly lead to annual funding for mitigation of service-related impacts. See Appendix C-3 for quantification of some of the possible results of implementing this measure. This option would address historic problems, as well as the impacts from Round I leasing.
G. Obtain additional personnel and funding for on-Reservation education and counseling programs for alcohol and drug abuse. Provide funds for education and counseling for spouse abuse and child abuse and neglect. These impacts would occur as a result of stresses/conflicts associated with Round I development.	The effectiveness of this option would be only Moderate because these types of problems are often difficult to remedy. Programs would be most effective if there is active community support and involvement. These programs would enhance social well-being on the Reservations. This option would address historic problems, as well as the impacts from Round I leasing.
H. Obtain increased funding to hire and train additional BIA police. (Meet Reservation standards described in this EIS Supplement.) Set up Law Enforcement Task Force comprised of law enforcement entities that operate on and adjacent to the Reservation. Emphasize cross-deputization of BIA Police with off-Reservation entities and clarification of existing laws and regulations. This would include determining who has jurisdiction where, and over whom, so enforcement on and off the Reservation can be handled more effectively.	The effectiveness of this option would be High because more trained police would be available and cross-jurisdictional issues would be addressed. This option could help to reduce conflicts between Native Americans and non-Native Americans on and near the Reservations. This option would address historic problems, as well as the impacts from Round I leasing.
I. Increase coordination between both Tribes and appropriate county government to develop an on-Reservation self-help law enforcement program similar to the Crime Watch Program. Educate Reservation residents about the program and help integrate it with the existing law enforcement program as a means to ameliorate increases in crime associated with Powder River I development.	The effectiveness of this option would be Moderate at addressing some law enforcement problems if there is active community support and involvement. The rating is only Moderate because there are limitations to what a nonprofessional program can achieve. This option would address historic problems, as well as the impacts from Round I leasing.

Mitigation Options	*Potential Effectiveness*
J. Anticipate deterioration of U.S. 212 and other roads on the Crow and Northern Cheyenne Reservations as a result of Round I lease development, and provide for maintenance and repair of highways as needed. This deterioration would occur from increased truck and commuter traffic across Reservation roads to the Round I new mine tracts near Ashland and because of increased traffic due to the population increase in Ashland. Provide additional funding for Highway Patrol units needed as a result of increased traffic in the area. Restrict truck traffic on heavily affected routes across both Reservations in cases where a route cannot be repaired or maintained to adequate standards. Consider improving the stretch of road between Birney and Sheridan for better access between Sheridan and the Powder River I new mine tracts. Consider improving the road between Ashland and Miles City for better access north to Miles City from the Powder River I new mine tracts.	The effectiveness of this option would be High because roads would be patrolled and necessary maintenance and repairs would be performed. If necessary maintenance and repairs could not be performed truck traffic would be restricted. This would ensure that road maintenance and repair problems would be addressed. If the stretch of road between Birney and Sheridan and between Ashland and Miles City was improved, the amount of traffic on Reservation roads would decrease, thereby reducing impacts to Reservation roads and law enforcement.
K. Minimize employee-commuting across the Reservations associated with Powder River I federal coal leasing. Specific proposals could include providing busses or vans to transport employees and encouragement of carpools.	The effectiveness of this option would be only Moderate because only commuter traffic would be decreased; this option would not address truck traffic or traffic due to the increased Ashland population.
L. Expand/upgrade IHS facilities on both the Northern Cheyenne and Crow Reservations to better handle health impacts from Powder River I federal coal leasing and to meet standards described in the EIS.	The effectiveness of this option would be High because adequate health care would be provided and because this is the most direct approach to such an improvement. This option would address historic problems, as well as the impacts from Round I leasing.
M. Develop work camps at the job sites during construction. These onsite camps would provide housing and some services for the incoming employees associated with Powder River I federal coal development.	The effectiveness of this option would be High because it would directly reduce impacts to housing and services in local communities. It could also lead to decreased conflicts between Native Americans and non-Native Americans and to reduced law enforcement demands.
N. Acquire community college status for Dull Knife Memorial College (DKMC). This would allow DKMC access to state education funds for increased non-Native American enrollment that could result from Round I federal coal development.	The effectiveness of this option would be High because currently no state or federal funds are received for non-Native American students at DKMC. Receipt of such funds would provide direct financial assistance to the College. This option would address historic problems, as well as the impacts from Round I leasing.
O. Obtain increased funding through the Department of Housing and Urban Development so sufficient housing is provided for the Native American population increase.	The effectiveness of this option would be High because the housing shortage problem would be addressed. Housing crowding problems and stress associated with housing crowding would also be alleviated. The housing shortage is currently the biggest service problem on the Reservation. This option would address historic problems, as well as the impacts from Round I leasing.
P. Obtain increased funding so existing housing could be adequately maintained and repaired. Money could be distributed by the Tribal Housing Improvement Program (HIP) which is funded through BIA.	The effectiveness of this option would be High because many of the housing quality problems could be addressed. Stress caused by housing quality problems would also be alleviated by this option. This option would address historic problems, as well as the impacts from Round I leasing.

Mitigation Options	Potential Effectiveness
Q. Obtain increased funding for the Tribal court system. Funding could be used to increase the number of judges, to provide administrative support for the judges, and to increase office space, if necessary.	The effectiveness of this option would be High at addressing impacts to the Tribal Court System because additional judges could process more cases so the courts would not become backlogged. This option would address historic problems, as well as the impacts from Round I leasing.
R. Develop an Ashland Area Community Task Force to facilitate communication between the different groups in the area (St. Labre Mission, Native Americans, area ranchers, Ashland businessmen). This task force could provide a forum to identify and address service needs and community problems related to development. The Ashland area will receive much of the growth related to the leasing alternatives; currently there is no community communication structure in place to bring the diverse groups in the area together for planning and trouble-shooting purposes. This Task Force could work with the Impact Monitoring Program (see Option 6A).	The effectiveness of this option would be Moderate to High at providing a first step in planning, coordinating, and troubleshooting among the different groups in the Ashland area. Community support from the different area groups would be crucial to the success of the Task Force. The Task Force idea would be most likely to succeed if a sponsor such as St. Labre Mission was involved in initiating the group. If this Task Force is successful, it could also help to reduce conflicts between Native Americans and non-Native Americans in the Ashland area and consequently reduce law enforcement demands/problems. This option would address historic problems, as well as the impacts from Round I leasing.

OBJECTIVE 7 and 8: REDUCE DISRUPTIONS TO SOCIAL ORGANIZATION AND SOCIAL WELL-BEING

Most impacts to social organization and social well-being are "indirect" in that they result from impacts to services, lack of employment opportunities, and population inmigration, to mention a few. Because of their indirect nature, it is impossible to quantify these impacts. However, mitigation measures can be identified that would generally lessen the impacts to social organization and social well-being. Implementation of mitigation options described elsewhere in Section 4.31 could reduce negative impacts to social well-being and help alleviate the negative consequences of changes to social organization. This objective is organized according to the major mitigation objectives that have been identified in this section, such as *OBJECTIVE 1 — IMPROVE EMPLOYMENT OF NATIVE AMERICANS.*

Mitigation measures which would increase Native American employment could have the following effect on Reservation social organization and social well-being:

- Reduction in Native American poverty because of increased income to Native American families.
- Reservation population would not become as diverse because fewer non-Native Americans would be hired at the mines.
- Native Americans who work at the mines would be less isolated because of the larger numbers of Native Americans employed.
- Less pressure on the Tribal government to provide increased/enhanced services to Tribal members because of increased Native American employment and income, and decreased regional and Reservation inmigration.
- Less conflict among Native American groups on the Reservation because more people would benefit from development.
- Increased feelings of personal control among Reservation residents due to the ability to obtain employment, and provide for families.
- Less conflict between Native Americans and non-Native Americans because there would be fewer non-Native Americans and consequently less competition for resources.
- Less stress due to the reduction of the above impacts would result in less alcoholism and drug abuse, family violence, and crime.
- Changes in the perceptions of Native American Reservation residents from the idea that they would not receive any benefits from development to the perception that they could receive some benefits.

Mitigation measures which would reduce the population influx associated with coal development could have the following effects on Reservation social organization and social well-being:

— Less impact to Reservation service/infrastructure because less demand would occur.

— Less conflict among Native American groups and between Native Americans and non-Native Americans because there would be less competition for resources.

— Less diversity on the Reservation because less inmigration would occur.

— Less stress due to the reduction of the above impacts would result in less alcoholism, drug abuse, family violence, and crime.

Mitigation measures which would increase Tribal revenues could have the following effects on Reservation social organization and social well-being:

— Tribe could more effectively deal with demands on service/infrastructure so the impacts to service/infrastructure provision (see paragraph below on services) would not be as severe.

— Changes in the perceptions of Native American Reservation residents from the idea that they would not receive any benefits from development to the perception that they could receive some benefits.

Mitigation measures which would increase the effectiveness of Tribal government could have the following effects on Reservation social organization and social well-being:

— Option 5B could reduce the conflicts between Native Americans and non-Native Americans.

— Provision by the Tribal Council of better feedback to Tribal members regarding Tribal Council and coal company activities (Options 5A and 5C) could lead to increased coordination and cooperation and less conflict among Tribal members.

Mitigation measures which increase service/infrastructive capacity could have the following effects on Reservation social organization and social well-being:

— Less conflict among Native Americans and between Native Americans and non-Native Americans due to less competition for services.

— Fewer problems would occur in the Ashland area if the Task Force became operational and communication improved among the different groups in the area (Option 6R).

— Lessened stress among Reservation residents regarding housing and service provision because these problems would be addressed through the Monitoring Program (Option 6A) and various other measures.

— Increased feelings of control over Reservation activities with the implementation of the self-help law enforcement program (Option 6I), increased Northern Cheyenne involvement in the Colstrip schools (Option 6E), participation in the monitoring program (Option 6A), participation in the Ashland Task Force (Option 6R), community involvement in the education process for alcoholism, drug abuse and family abuse (Option 6G).

— Use of Dull Knife Memorial College TV station as a public forum for interested parties, could lead to reduced conflict and increased cooperation and coordination among Reservation and regional populations. This option would address historic problems, as well as the impacts from Round I leasing.

— Increased funding for Lame Deer Elementary and Busby Schools and increases in Native American cultural activities and involvement at off-Reservation schools (Options 6C, 6D, and 6E) would lead to more acceptable education options being available to Reservation residents which could aid in preserving Northern Cheyenne culture and enhancing the social well-being of Tribal members.

— Enhanced social well-being with the implementation of the education program for alcoholism and drug abuse and family abuse problems (Option 6G).

— Less interaction (and, therefore, less conflict) between coal mine employees and Reservation residents if the road between Sheridan and Kirby is upgraded (Option 6J), and/or if the work camp is developed (Option 6M).

— Less stress due to the reduction of the above impacts would result in less alcoholism and drug abuse, family violence, crime. This option would address historic problems, as well as the impacts from Round I leasing.

— Changes in the perceptions of Native American Reservation residents from the idea that they would not receive any benefits from development to the perception that they could receive some benefits.

Mitigation measure which would reduce disruptions to culture could have the following effects on Reservation social organization and social well-being:

— Decreases in conflicts among Native Americans because the culture would remain strong.

— Decreases in conflicts between Native Americans and non-Native Americans (Northern Cheyenne Option 9C and Crow Option 9D).

— Less stress due to the reduction of the above impacts would result in less alcoholism and drug abuse, family violence, and crime.

In summary, mitigation measures which could provide the most relief to impacts to Reservation social organization and social well-being are those that would increase employment of Native Americans and these that would increase service/infrastructure capacity. The level of employment discussed under Appendix C-3 could be highly effective in alleviating many of the negative impacts to social organization and social well-being. The monitoring program (Option 6A) and Ashland Task Force (Option 6R) would be crucial to adequately address service/infrastructure problems. The adequate provision of services, together with substantially increased employment, could address most of the mitigable impacts to Reservation social well-being and social organization from these leasing alternatives.

OBJECTIVE 9: REDUCE DISRUPTIONS TO CULTURE (BELIEF AND VALUE SYSTEMS)

The Northern Cheyenne and Crow belief and value systems would be affected by development of Powder River I new mine and expansion/extension tracts. In most instances, leasing of these tracts would irreversibly impact entities that are part of the Northern Cheyenne and Crow belief and value systems. These impacts include:

Northern Cheyenne

Destruction of spirits associated with springs, turning areas of the Earth Surface Dome into spiritually inert dead earth, dislocations of the Great Birds/mediators between the Northern Cheyenne and the Spirit Beings of the Blue Sky Space, loss of the isolation necessary for the keeping of the Sacred Hat at Birney Village, changes in the distribution of mammals and certain plants whose parts are essential ritual items, and loss of the privacy and seclusion necessary for religious practices.

Crow

Irreparable damage to archaeological sites with *baxpe* (sacred) attributes and/or ethnic significance. Site types of particular concern are burials, fasting sites (prehistoric, historic, and modern), rock art sites, Sun Dance localities, sweat lodges, offering sites, Medicine Wheels, and tipi ring sites. Reduction of the environmental setting, loss of privacy for religious activities, and resulting deemphasis of cultural values would also occur.

Crow and Northern Cheyenne cultural leaders indicated that a "no action" alternative (i.e., High Baseline or Low Baseline Alternative) would be the only way to completely avoid these impacts which are, for the most part, unmitigable if mining occurs. Certain mitigating actions for other types of mine-related impacts are possible. These are discussed below, by Tribe.

I. Northern Cheyenne

Impacts to the Northern Cheyenne belief and value system would occur from development of the five new mine tracts just east of the Reservation and from the Colstrip A and B, Colstrip C, Colstrip D, Spring Creek, and the North and West Decker expansion/extension tracts north and south of the Reservation.

Mitigation Options	*Potential Effectiveness*
A. Cultural leaders have proposed that successful lessees notify the Northern Cheyenne Cultural Protection Board regarding mine development and involve them early in the planning process to mitigating those impacts that are mitigable, given mining. Possible mitigating measures include:	The effectiveness of these options could be High at achieving partial mitigation because the Cultural Board would be involved at the outset of the mitigation planning process, and the Board is the most knowledgeable entity regarding proper mitigation.

Mitigation Options	*Potential Effectiveness*
— Partial mitigation would involve video taping the history and sacred characteristics of each affected spring through discussion by knowledgeable Northern Cheyenne elders. Tape would be stored in Dull Knife Memorial College (DKMC) archives. — Partial mitigation of the disturbance of burial sites could be mitigated by strictly applying standards recently developed by the Northern Cheyenne Cultural Protection Board. — Partial mitigation of the disturbance of past and present ceremonial areas, original homesteads of Birney Village families, and burial sites would involve developing a systematic oral history of these areas for preservation in the DKMC archives and avoiding site-specific locations whenever feasible.	
B. Teach Northern Cheyenne language and culture at all academic levels in area schools. This would help to avoid loss of culture and language in the face of a large non-Native American population influx.	The effectiveness of this option could be Moderate to High because it would enable Northern Cheyenne children to learn to speak Cheyenne. The ability to speak Cheyenne is very important to the survival of the culture. In addition, learning the culture and language would reinforce the importance of these ideas in the face of increasingly more diverse ideas and value systems. This option would address historic problems, as well as the impacts from Round I leasing.
C. Educate mine employees (including contractors and subcontractors) to promote respect for the lifestyle, culture, and values of Native Americans who reside near the mine. Such cultural sensitivity training could include the need to respect sacred sites and activities, and to avoid confrontations with Native Americans on and adjacent to the Reservation. This training would also educate mine employees of the importance to Native Americans to be able to visit the tract for religious, lifestyle, family, tradition, or subsistence reasons.	The effectiveness of this option would be Moderate, at best. Knowledge regarding cultural sensitivity can be given to people; this does not mean they would subsequently act in a culturally sensitive manner. However, if this mitigation is successful, it could help to decrease conflicts between Native Americans and non-Native Americans.

II. Crow

Impacts to Crow belief and value systems would occur mainly from development of the Spring Creek, North Decker, and West Decker expansion/extension tracts. In addition, Crow officials feel that federal coal leasing in the study area (new mine and expansion/extension tracts) would reduce the value of Crow coal and thereby force some Crow members to sell their land to subsist. This would accelerate the loss of Tribal land base and weaken the ethnic identity of the Crow.

Mitigation Options	*Potential Effectiveness*
A. Crow cultural leaders have proposed that successful lessees notify the Crow Historic and Cultural Committee (CHCC) concerning all aspects of cultural resource impact mitigation. This would need to occur in the planning process and would include a early determination of site significance, avoidance of all burial and cultural sites when possible, and respectful treatment when avoidance is not possible.	The effectiveness of this option could be High at achieving partial or possible mitigation because the CHCC would be involved at the outset of the mitigation planning process, and the CHCC is the proper group to be making the decisions regarding mitigation.

Mitigation Options	*Potential Effectiveness*
B. Develop a joint Task Force of Tribal, state, federal, and county officials to ease some of the cultural/ethnic stress created by the various jurisdictional disputes (see Options 6A and 6G).	The effectiveness of this option could be Moderate to High at easing cultural/ethnic stress depending on how effective it is at addressing jurisdictional disputes. See Options 6A and 6G for further information on similar proposals. This option would address historic problems, as well as the impacts from Round I leasing.
C. Recognize Indian coal as a major alternative coal supply in the Powder River Basin. This could result in explicit recognition of Indian coal development plans via the RCT process in setting regional leasing targets. Doing so could reduce unnecessary competition between federal and Indian coal, and increase revenue/development potential of Indian coal. This is important because Crow ethnic identity would be affected due to future land sales by Tribal members in order to subsist. These land sales have occurred in the past, thereby weakening spiritual/cultural ties to the land and to environmental features with spiritual values contained within the lands that are sold.	The effectiveness of this option could be High if both Tribes become actively involved with the Powder River RCT and if Secretary of Interior explicitly factors Tribal coal development plans into Powder River coal leasing targets. This option would address historic problems, as well as the impacts from Round I leasing.
D. Educate mine employees (including contractors and subcontractors) to promote respect for the lifestyle, culture, and values of Native Americans who reside near the mine. Such cultural sensitivity training could include the need to respect sacred sites and activities, and to avoid confrontations with Native Americans on and adjacent to the Reservation. This training would also educate mine employees to the importance of Native Americans to be able to visit the tract for religious, lifestyle, family, tradition, or subsistence reasons.	The effectiveness of this option would be Moderate, at best. Knowledge regarding cultural sensitivity can be given to people; this does not mean they would subsequently act in a culturally sensitive manner. However, if this mitigation is successful, it could help to decrease conflicts between Native Americans and non-Native Americans.

4.32 Mitigation Proposals Received From Northern Cheyenne Tribe

Background

The Powder River Regional Coal Team unanimously approved a motion at its June 21, 1983, meeting that invited the Northern Cheyenne Tribe to submit proposed mitigating measures. A commitment was made to consider those proposed measures in the Powder River II draft EIS. The Tribe's proposed measures, which are in the form of potential federal coal lease stipulations, are summarized and discussed in this section of the Supplement. A complete text of the Tribe's proposals appears in Appendix C-1. The proposed stipulations apply in concept to all Powder River I new mine and expansion/extension tracts in Montana.

Northern Cheyenne Proposals

The mitigation measures discussed in the remainder of this section are from the Northern Cheyenne Tribe. These and other mitigating options are also presented in Section 4.31. The Tribe's position is that implementation of its proposals should be through written agreements to be pursued immediately after the successful bidder is identified.

Proposed Measure 1: Employment Preference

Proposal

The Northern Cheyenne Tribe proposes that Tribal members and members of Tribal families be given preferential consideration in recruitment, training, hiring, promotion, and work force reductions in all categories of employment attached to development of the tracts. This requirement, according to the proposal, would be implemented through a written agreement between the Tribe and the lessee, subject to the approval of the Secretary of the Interior. The agreement would cover the following programs:

Quantitative goals and schedules for each employment category;

Protection of the lessee with regard to personnel decisions;

Recruitment of preferred employees;

Training;

Scholarships and tuition programs;

Cultural awareness workshops for non-Native Americans;

Mass transportation programs for commuting workers;

Announcement of the preferential program to involved labor unions;

Requirements for contractors and subcontractors to abide by the agreement on employment preference;

Establishment of a lessee-Tribal employment committee; and

The lessee's bearing of administrative costs associated with the employment committee.

Discussion

This proposed mitigating measure would have broad effects that are not quantifiable at this time since specifics of the proposed agreement are unknown. For the Northern Cheyenne, it would result in an improved climate of economic opportunity. Unemployment has been and remains high among the Northern Cheyenne; social problems are related to a chronic lack of job opportunities.

This proposal could reduce the overall level of inmigrating workers required in the region. Consequently, it is possible that it could reduce the projected level of non-Native American inmigration onto the Reservation and the resulting conflicts that could result. Additionally, it is possible that such a proposal could stimulate an even greater level of Native American return-migration than expected, impacting Tribal services even further. However, this may be more than offset by the greater level of income that would result.

Major uncertainties also deserve attention. It is not known how the application of the proposed stipulation would affect the private sector's view of the value of the coal resource. The Tribe has concluded that this factor should not affect consideration of the measure in any way.

Furthermore, labor supply would need to be assessed; it would depend on the availability of surplus labor (which appears to be adequate), the level of sequencing of production, the actual agreed upon levels of preferential hiring and training, and similar factors. The Tribe has suggested that this measure could be implemented as turnover in existing jobs takes place on expansion/extension tracts.

Authority for employment preferences may rest in section 30 of the Mineral Leasing Act. In addition, section 703(i) of the 1964 Civil Rights Act legitimizes preferential treatment of Native Americans in employment practices for enterprises on or near Indian Reservations.

Proposed Measure 2: Contracting Preference

Proposal

The Northern Cheyenne Tribe proposes that businesses controlled by the Northern Cheyenne Tribe or its members be given preferential consideration in all contract awards associated with conduct of operations and purchases of material and equipment for operations. According to the proposal, this requirement would be implemented through an agreement between the Tribe and the lessee, subject to the approval of the Secretary of the Interior. This agreement would cover the following points:

Quantitative goals and schedules for their achievement;

A certification procedure under which a business seeking preferred status would document (a) its control by

the Tribe or a Tribal member and (b) its capability of providing particular services, material, or equipment;

Technical and financial assistance to preferred businesses in obtaining certification;

Advance notice to preferred businesses of contracts to be awarded;

In competitive situations, the establishment of formulas for the granting of competitive margins (a reasonable sum by which a preferred business' bid could exceed all other bids);

A requirement of all contractors and subcontractors that they in turn also comply with terms of the agreement;

Establishment of a contracting preference committee with members from the lessee and the Tribe; and

The lessee's bearing of administrative costs associated with the contracting preference committee.

Discussion

The proposed stipulation would have effects similar to those discussed for the employment preference proposal. Increased employment of Northern Cheyenne would result from the proposal; capital investment on the Reservation could also increase as a result.

As would be true of the employment preference proposal, implementing this proposed stipulation could affect the level of private sector interest in Powder River federal coal and the bid value of the potential leases covered by this stipulation. The level of that effect is not known. The Northern Cheyenne Tribe has concluded that market value factors do not constitute a valid criterion of consideration. The Tribe suggests that the measure could be implemented on new mine tracts as development begins and on expansion/extension tracts as existing contracts expire.

At this time, the number and type of Northern Cheyenne-controlled businesses that could take advantage of this opportunity are very limited. Such agreements could lead to the creation of new businesses on the Reservation with sufficient backing to acquire needed business loans. This approach would capture more benefits of nearby coal development than has occurred in the past.

Authority for stipulating contracting preference may rest in section 30 in the Mineral Leasing Act.

An alternative method of achieving the goals of this proposed stipulation would be the establishment of voluntary programs between the lessee and the Tribe. Active federal involvement would be absent from a voluntary program, and its effectiveness, although uncertain, is expected to be low. The Tribe has concluded that a voluntary approach would be ineffective and impractical.

Proposed Measure 3: Law and Order and Traffic

Proposal

The Northern Cheyenne Tribe proposes that each lessee be required to obtain a covenant from each of its employees that the employee, while on the Reservation, will comply with all standards of conduct generally applicable to Tribe members. Truckers operating on the Reservation also would be required to sign a covenant with the lessee to operate their vehicles in compliance with all laws, ordinances, and rules applicable to the use of motor vehicles by Tribe members. Each lessee would contractually require each of its contractors, subcontractors, and suppliers to obtain like covenants from their truckers and employees. Enforcement, through disciplinary action, would be the responsibility of the lessee, contractors, and subcontractors if a violation was reported by the Tribe.

These provisions would be implemented by an agreement between the Tribe and the lessee, subject to approval by the Secretary of the Interior. The agreement would cover the following points:

As a condition of employment, written assumption of the conditions described above by each employee and each trucker;

Education of employees and truckers on standards of conduct prevailing on the Reservation;

Appropriate employment-related disciplinary procedures for particular violations;

Resolution of disputes concerning the occurrence of violations;

Notification to labor unions of the agreement; and

Funding by the lessee to cover administrative costs incurred by the Tribe in implementing the agreement.

Discussion

Implementation of the proposed measure could reduce the expected adverse traffic and law and order impacts along transportation corridors on the Reservation (see Chapters 4 and 4A). Truck traffic on U.S. 212 and MT 39 is dangerous and increased volume would worsen the problem. Traffic offenses generally go undetected because little patrolling of Reservation roads occurs.

Authority for making the proposed stipulation may be found in section 30 of the Mineral Leasing Act.

Proposed Measure 4: Impact Assistance

Proposal

The Northern Cheyenne Tribe proposes two alternative stipulations aimed at responding to the issue of impact funding. The first alternative would make the following provisions:

Lessees would be required to contribute to the Tribe for planning and providing public service and facilities on the Reservation;

Contributions would be calculated by taking the federal bid and royalty funds generated by the lease, dividing that figure by the non-Reservation resident population of Big Horn, Rosebud, and Powder River Counties, and then multiplying that number by the resident population of the Reservation;

Contributions would be provided to the Tribe in concert with federal royalty payments; and

This funding would be implemented through an agreement between the Tribe and the lessee, subject to the approval of the Secretary of the Interior.

The requirements of the second alternative would be as follows:

Lessees would be required to contribute to the Tribe for planning and public services and facilities on the Reservation;

The contribution would be based on the previous year's Tribal expenditures for Reservation services and facilities, divided by the total Reservation population;

The per capita expenditure described above would be matched by the lessee for each project employee and family member residing on the Reservation. Furthermore, the lessee would contribute one-third of this per capita expenditure level for each employee residing off the Reservation; and

The program would be implemented through an agreement between the Tribe and the lessee, subject to approval by the Secretary of the Interior. This alternative would cover the following Tribal expenditures: education, ambulance service, health care, alcoholism and drug abuse treatment, law and order, Tribal court, rural officers, recreational facilities, transportation, shelter home for children, day care, elderly residence and care, garbage canister program, utility commission, and Tribal government.

Discussion

The first alternative would essentially be a mechanism to ensure that the Tribe would receive per capita funding equivalent to the level received by state government relative to non-Native American residents of the three-county area. A further assumption is that all of the federal bid and royalty monies from new federal coal development in Big Horn, Rosebud, and Powder River Counties would be spent in those counties. The second alternative is a cost-sharing approach that would ensure that the lessee would bear costs associated with project-related residents. The Tribe believes this would compensate for spillover effects from inmigrants living off-Reservation in southeastern Montana and in the Sheridan area of Wyoming.

The Tribe has expressed no preference between the alternatives proposed. Evaluation of these proposals is difficult since policy and legal questions are involved. The following factors are among those that might be considered:

The actions of Congress in making decisions on the distribution of mineral royalties imply that federal funding involvement should be limited to a proportionate return of the local revenues to state governments. The Northern Cheyenne Tribe has asserted that the Secretary of the Interior, given trust authority, has unequivocal authority to attach stipulations to leases in the manner described in the proposals, even though that authority is not expressed.

Equity questions among non-Native American, non-Reservation residents in the area, and the Northern Cheyenne Tribe and its members deserve attention. For example, the state's allocation of royalty funds from the federal government may not be entirely consistent with the location of impacts that are created by development of federal coal tracts. The first alternative apparently is based on the idea that these funds should be targeted more or less exclusively to the areas affected by mining.

Jurisdictional and taxation issues among the State of Montana, the counties, and the Tribe are complex. The extent to which the Tribe bears responsibility for services and facilities used by non-Native American residents of the Reservation is somewhat restricted compared to those provided by other local governments in the area. The Tribe has listed the following programs that are at least partially funded by the Tribe and which non-Native Americans may use: roads, law enforcement, Tribal Court, recreation areas, utility services, emergency medical services, ambulance service, and firefighting. The Tribe feels that coal development in the region has increased the Tribe's cost of responding to Northern Cheyenne needs, independent of non-Native American settlement on the Reservation. A primary example is law enforcement.

Legal authority for attaching stipulations of this type remains to be clearly established. It appears to be somewhat less secure than the possible measures such as employment preference. However, the Tribe has concluded that this authority is unequivocal.

Given that there are five operating coal mines and four power plants as well as proposed baseline projects in the area, reliable evaluations of baseline populations and populations attributable to any particular construction project or mining operation are complex and would require careful analysis. Such a situation would ideally utilize a monitoring program of considerable scale in order to track impacts and monitor the application and effectiveness of mitigation measures. A funding source, or sources, for such an effort has not been identified.

It is difficult to evaluate the effect on the market value of the coal resource from attaching these stipulations to individual leases . However, the Tribe has concluded that this is not a valid consideration.

The principal available alternative to requiring agreements like those proposed would be a voluntary approach without federal participation. The effectiveness of such approaches is uncertain but is expected to be low. The Tribe has concluded that a voluntary approach would be ineffective.

(NOTE: A proposed Northern Cheyenne stipulation on environmental protection was submitted by the Tribe but is not discussed here because no impacts to the physical environment are identified in this Supplement.)

4.4 SHORT-TERM USES, LONG-TERM PRODUCTIVITY, IRREVERSIBLE RESOURCE COMMITMENTS, AND UNAVOIDABLE ADVERSE IMPACTS

The leasing of coal under Powder River Round I would lead to annual average mining of 27 million tons from Leasing Alternative 2A, 20.6 million tons from Leasing Alternative 2B, and 46.1 million tons from Leasing Alternative 4. This production would occur on both new mine and expansion/extension tracts over a period of approximately 40 years. In the short term, the off-Reservation services/infrastructure would experience widespread serious shortages from each of the three leasing alternatives. In the long term, the development of these tracts could provide the region with a larger number of trained workers, improvements to regional services, and a stronger regional economy.

In the short term, the Northern Cheyenne Reservation would experience a return of Native Americans to the Reservation and increased demands on already inadequate services by the return-migrants, as well as from workers and their families who settle on-Reservation and off-Reservation, particularly in the Ashland/St. Labre area. In the long term, infrastructure inadequacies would likely remain the same or worsen on both Reservations due to the magnitude of natural population growth on the Reservation and the lack of opportunity of Tribal government to take advantage of many sources of impact aid available to off-Reservation communities.

The Northern Cheyenne Reservation would see an improved infrastructure near the Reservation boundary, in areas such as Ashland, but would not experience the economic gains to the rest of the region. On the Northern Cheyenne and Crow Reservations, there would also be short-term and long-term impacts to culture, social organization, and social well-being from each of the three leasing alternatives.

The mining of coal from Powder River Round I tracts would result in the irreversible commitment of capital and labor resources to develop and operate mines located at the tracts. These resources would be unavailable for other projects throughout the life of the mining activity. There would also be an irreversible commitment of Northern Cheyenne and Crow Tribal government capital and labor resources to deal with the impacts of development from each of the three leasing alternatives. The contacts between Tribal governments and federal, state, and local governments concerning the impacts of coal development, could, in the long run, facilitate the Tribe's ability to deal with other governments more effectively.

Development resulting from leasing of Powder River Round I coal would cause some unavoidable adverse impacts to services/facilities/infrastructure, social organization, social well-being, and cultural conditions from each of the three leasing alternatives. The Reservations would become more diverse places. Conflicts among Native American groups and between Native Americans and non-Native Americans would increase. Increases in non-Native American residents on the Northern Cheyenne Reservation and regional population growth could lessen the feeling that the Reservation is a homeland for the Northern Cheyenne. Social well-being would be adversely affected by service shortfalls and changes in social organization and cultural conditions. Those Reservation residents who enjoy the rural lifestyle and/or isolation of the Northern Cheyenne and Crow Reservations would find their lives changed by the increases in area development and population growth, particularly in the Ashland/St. Labre area.

Spiritual and cultural impacts to the Northern Cheyenne and Crow Tribes would occur both directly and indirectly due to mining activity. For the Northern Cheyenne, the body of the Earth-Surface Dome would be disturbed directly by mining, and the Blue-Sky Dome would be affected by dust from mining. Isolation necessary for the keeping of the Sacred Hat at Birney Village may be lost due to development of the southernmost new mine tracts. The spirits associated with springs lost to mining would be irreversibly lost because they would leave the area and not return. There would also be dislocation of the Great Birds/mediators between the Cheyenne and the Spirit Beings of the Blue-Sky Space and changes in the distribution of mammals and certain plants whose various parts are essential ritual items. The increasing population would lead to a loss of the privacy and seclusion necessary for religious practices.

For the Crow, irreversible adverse impacts to archaeological sites with *baxpe* (sacred) attributes and/or ethnic significance (such as burial sites, fasting sites, rock art sites, and Sun Dance localities) would occur. Crow culture would also experience a weakening of ethnic identity through loss of land, reduction of the environmental setting which provides major sources of inspiration, loss of privacy for religious activities, and deemphasis of traditional values.

CHAPTER 4A
ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter presents the effects to the Northern Cheyenne and Crow Tribes from Powder River I federal coal leasing, using the Low Baseline Alternative as the region's future energy scenario.

The analysis of the Low Baseline Alternative describes the future economic and social conditions that would occur on both Reservations without any Powder River Round I federal coal leasing. That analysis is the baseline future against which each of the three Leasing Alternatives 2A, 2B, and 4, are measured in the remainder of Chapter 4A. Consequently, the changes or impacts that are described under Leasing Alternative 2A for 1995, for example, are those impacts that would occur over and above conditions that are expected to occur in 1995 under the Low Baseline Alternative. Chapter 4 (preceding chapter) is organized in the same manner but assumes that the High Baseline Alternative is the region's energy future. Both Chapter 4 and 4A begin with respective versions of the region's baseline (i.e., High Baseline, Low Baseline, respectively) and go on to measure impacts against each of those possible energy futures. As a result of the greater distance between the Crow Reservation and the Powder River Round I new mine tracts, the social, economic, and cultural impacts to the Crow Reservation were found to be less severe than those of the Northern Cheyenne Reservation. Therefore, the level of detail presented in Chapter 4A for the Crow Reservation is less than for the Northern Cheyenne Reservation.

4A.1 LOW BASELINE ALTERNATIVE

Introduction

The Low Baseline Alternative includes existing mines and power generation facilities in the Montana portion of the Powder River Region: the Rosebud mine, the Big Sky mine, the Spring Creek mine, the Decker mine, the Absaloka mine, and the electric power generation facilities at Colstrip. Map 2 shows the Low Baseline scenario for the study area. Note that the five proposed High Baseline projects shown on Map 1 do not appear in the Low Baseline.

Economic activity in the Montana portion of the Powder River Region is projected to decline between 1987 and 1990 and then remain at the 1990 level through the year 2005. Given the current demand for coal from the Montana portion of the Powder River Region, this scenario is likely to occur. However, demand for energy minerals has changed quickly in the past and is likely to change again in the future with disruptions in world energy supplies.

All effects of the Low Baseline Alternative are measured from either 1986 or 1987 levels in section 4A.1. Impacts from each of the three leasing alternatives are then measured against the level of the Low Baseline Alternative in Section 4A.2, "Impacts of Leasing Alternatives."

4A.1.1N Employment

The 1986 employment level on the Northern Cheyenne Reservation is estimated at 515 Full-time Equivalent (FTE) jobs. This employment level is forecasted to decline to 469 by 1990, a decrease of 9 percent. This decrease in Reservation employment between 1986 and 1990 is primarily due to falling Tribal and Bureau of Indian Affairs (BIA) budgets and the resulting reduction in employment by the Tribal government. After 1990, employment on the Northern Cheyenne Reservation is expected to stabilize at 469 FTE jobs.

4A.1.2N Population

The total projected population of the Reservation under the Low Baseline Alternative is shown in Table 4A-1. There would be no project-related population growth on the Reservation as a result of the Low Baseline Alternative. The population is projected to grow by 31 percent between 1987 and 2005. This growth would be due to the natural increase of the population.

Birth rates on the Northern Cheyenne Reservation are much higher than death rates. This creates a high natural increase in Reservation population. The current poor economy and lack of jobs on the Reservation have caused more Northern Cheyenne to leave the Reservation than to return over the last 5 years. Under the Low Baseline Alternative, both of these trends are expected to continue. Even under the Low Baseline Alternative, the population of communities on the Reservation is expected to grow because of natural increase. Under the Low Baseline Alternative, the annual average outmigration of Northern Cheyenne Tribal members is forecasted to increase to approximately 40 a year by 2003 from the present rate of approximately 30 a year. Approximately 2,250 Northern Cheyenne living off-Reservation by 2005 are forecasted.

Growth of nearby off-Reservation communities can affect the Northern Cheyenne Reservation. However, due to the poor economy in the area, the population of nearby off-Reservation communities is expected to remain at 1987 levels or increase slowly under the Low Baseline Alternative. Ashland is projected to maintain its present population, while Broadus and Colstrip are expected to grow by only 1 percent a year through 2005.

4A.1.3N Income

Household income on the Northern Cheyenne Reservation under the Low Baseline Alternative is projected to be $16,260,000 in the year 2005, 9 percent lower than household income in 1986. The decrease in household income occurs in the period between 1986 and 1990 because the economy on the Reservation is expected to decline during that period.

Business activity under the Low Baseline in the year 2005 is forecasted at $15,650,000, 6 percent lower than the 1986 level. This is also a reflection of the expected downturn in the Reservation economy between 1986 and 1990 as calculated by a BLM input/output model of the Montana portion of the Powder River Region. (See Technical Report 1.) Table 4A-2 shows the total projected household income and business activity on the Northern Cheyenne Reservation for the Low Baseline Alternative.

The lack of outside economic stimulus to the Reservation economy means that the Reservation economy is closely tied to changes in Tribal revenue and BIA funding. These sources of revenue are expected to decline until 1990. They are expected to remain at that level through 2005. Under the Low Baseline Alternative, the decrease in household income occurs at the same time there is an increase in population. Therefore, for the Reservation as a whole, the level of poverty is likely to increase.

TABLE 4A-1
PROJECTED POPULATION
LOW BASELINE ALTERNATIVE
Northern Cheyenne Reservation

Year	Native American	Non-Native American	Total	Percentage Increase Over 1987
1987	3806	565	4371	0
1990	4004	565	4569	5
1995	4356	565	4921	13
2000	4739	565	5304	21
2005	5155	565	5720	31

Source: BLM, 1988

TABLE 4A-2
TOTAL HOUSEHOLD INCOME AND BUSINESS ACTIVITY
LOW BASELINE ALTERNATIVE
Northern Cheyenne Reservation

Year	Household Income	Business Activity
1986	$17,960,000	$16,700,000
1990	$16,260,000	$15,650,000
1995	$16,260,000	$15,650,000
2000	$16,260,000	$15,650,000
2005	$16,260,000	$15,650,000

Source: BLM, 1988

4A.1.4N Tribal Fiscal Conditions

Revenue

Tribal revenues are not expected to increase between 1987 and 2005. Tribal revenues are highly dependent on the sale or lease of Reservation resources, primarily livestock grazing and timber harvest. The Tribe does not tax persons, property, or income on the Reservation, so increases in population and income on the Reservation do not lead to an increase in Tribal revenue. The federal government provides funds for specific Reservation programs or projects such as housing and general assistance. These funds are generally tied to the appropriation process, and change with fluctuations in government priorities.

Expenditures

Demands for Reservation services would increase along with population increases under the Low Baseline Alternative. Increased expenditures would be needed to maintain services on the Reservation at present levels due to the population growth described in section 4A.1.2N. Expenditures needed to provide adequate service levels under the Low Baseline Alternative are shown in section 4A.1.6N. The expenditures shown in section 4A.1.6N apply only to the growth in population associated with the Low Baseline Alternative and would not correct current deficits.

4A.1.5N Tribal Government

The Low Baseline Alternative would affect the Northern Cheyenne Tribal government structure and function. In recent years, Tribal government has become more complex (Feeney, et al., 1986) and more involved in coordinating with outside governments, in part, due to energy development in the Montana portion of the Powder River Region in the 1970s and 1980s.

The ability of the Tribe to respond to population growth under the Low Baseline Alternative would be impaired because the budgets of the BIA and the Tribe are declining. The Tribe currently provides a variety of social services, some of which are partially or totally funded by BIA. As the population on the Reservation increases, Tribal members may request additional services and more support for existing services from the Tribal government. These increased demands occur at a time when Tribal budgets would not allow expansion of services, a situation that could create additional conflict between the Tribal government and Tribal members. Should the Tribe be able to obtain additional funds, employment by Tribal government is likely to increase. In addition, the Tribal office building which is currently in need of repair, may have to be expanded to increase office space.

Increased complexity of government on the Reservation could mean a reduction in the amount of individual participation in government meetings by Tribal members. More issues are likely to be delegated to special committees where fewer Tribal members would be likely to participate. This could increase the feeling among some groups on the Reservation that their views are not being heard, and that the government does not represent them. At the extreme, these feelings could lead to increased factionalism on the Reservation, resulting in more political disputes within the Tribe.

4A.1.6N Housing, Services, Infrastructure

This section describes the effects on housing, services, and infrastructure on the Northern Cheyenne Reservation due to population growth associated with the Low Baseline Alternative, including natural population growth, and population outmigration. Natural population growth is high among Native Americans on the Northern Cheyenne Reservation due to the high birth rate. Net outmigration is currently occurring (Feeney, et al., 1986) and is expected to continue until 2005 under the Low Baseline Alternative. Under the Low Baseline Alternative, the Native American population on the Northern Cheyenne Reservation is projected to increase approximately 35 percent (1,349 people) between 1987 and 2005. The non-Native American population is expected to remain stable at 565 persons under this Low Baseline Alternative. See section 4A.1.2N for a more detailed discussion of population forecasts.

Natural population growth accounts for all of the increase in service demands under the Low Baseline Alternative. Tables 4A-3 and 4A-4 describe the estimated increases in demand for housing and various facilities and services due to population growth associated with the Low Baseline Alternative and the costs associated with providing these services.

The remainder of this section briefly discusses each of the various services. Native American and non-Native American services are discussed separately in cases where service provision does not apply equally to both groups. The service demand estimates and associated cost estimates in Tables 4A-3 and 4A-4, respectively, are based on changes over and above 1987 levels and represent providing adequate service to that increment of population change resulting from the Low Baseline Alternative. The service demand values are calculated using regional service demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. These are both described in Technical Report 3.

Housing

Housing demand would be high under the Low Baseline Alternative; 270 units that could accommodate families would be needed by 2005. There is currently a severe shortage of units for both rent and purchase on the Reservation (Feeney, et al., 1986; M. Bearcomesout, 1987). Construction by the Northern Cheyenne Housing Authority to alleviate the housing shortage is limited by lack of funding. It is unlikely the 1988 deficiency of 420 units would be met by 2005, much less the provision of 270 additional units.

TABLE 4A-3
CHANGES[1] IN FACILITIES/SERVICES — LOW BASELINE ALTERNATIVE
Northern Cheyenne Reservation

	1990	1995	2000	2005
No. Housing Units That Can Accommodate Families:				
Native American Families	40	110	187	270
Non-Native American Families	0	0	0	0
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	0	0	0	0
Non-Native American Singles	0	0	0	0
Water Requirements:				
Water Flows (gpd)*	29700	82500	140000	202400
Water Storage (gpd)*	49500	137500	233300	337300
Sewage Treatment Requirements (gpd):*	19800	55000	93300	134900
Schools:				
No. Students in Grades 1-8[2]	24	65	111	160
No. Students in Grades 9-12[2]	5	15	25	36
No. Teachers in Grades 1-8[3]	1.5	3.5	6.0	9.0
No. Teachers in Grades 9-12[3]	.5	1.0	1.5	2.0
Sq. Ft. School Space, Grades 1-8[3]	2400	6500	11100	16000
Sq. Ft. School Space, Grades 9-12[3]	600	1900	3100	4500
Health Care:				
No. of Physicians				
Native American	.5	.5	1.0	1.5
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	.5	.5	.5
Non-Native American	0	0	0	0
No. Nurses				
Native American	.5	1.5	2.5	3.5
Hospital Beds				
Native American[4]	1.0	2.0	3.5	5.5
Non-Native American	0	0	0	0
Ambulance Service				
Personnel	0	0	0	0
Vehicles	0	0	0	0
Law Enforcement:				
No. of Officers	.5	2.0	3.5	5.0
No. of Vehicles	0	1.0	1.0	2.0
Sq. Ft. Office Space	50	200	350	500
Fire Protection:				
No. of Volunteer Officers	0	0	0	0
No. of Vehicles	0	0	0	0
Sq. Ft. Office/Storage Space	0	0	0	0
Social Services:				
No. of Social Workers				
Native American	.5	1.5	2.0	3.0
Non-Native American	0	0	0	0
Population Change:				
Native American	198	550	933	1349
Non-Native American	0	0	0	0

* gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for a description of how these numbers were calculated.

Source: BLM, 1988

TABLE 4A-4
ADDITIONAL SERVICE EXPENDITURES NEEDED[1]
LOW BASELINE ALTERNATIVE
Northern Cheyenne Reservation
2005

Service	$ Needed
Housing	
Capital Costs	$14,040,000
Operating Costs	126,000
Water	
Capital Costs	2,631,000
Operating Costs	36,000
Sewer	
Capital Costs	3,170,000
Operating Costs	23,000
Solid Waste	
Capital Costs	28,000
Operating Costs	21,000
Education	
Capital Costs	1,969,000
Operating Costs	1,034,000
Health Care	
Capital Costs	563,000
Operating Costs	877,000
Law Enforcement	
Capital Costs	93,000
Operating Costs	262,000
Fire Protection	
Capital Costs	0
Operating Costs	16,000
Roads	
Capital Costs	No reliable
Operating Costs	information available
Recreation	
Capital Costs	19,000
Operating Costs	44,000
Social Services	
Capital Costs	33,000
Operating Costs	108,000

[1] Figures represent increases over 1987.

All expenditure figures are in 1985 dollars. Actual expenditures required, in 2005 dollars, would likely be considerably higher depending on the inflation rate between 1985 and 2005. See Technical Reports 3 and 4 for information on how these expenditures were calculated.

Source: BLM, 1988

Newly formed Native American families would probably live with friends or relatives, exacerbating the crowded conditions that already exist.

Effects on Reservation housing under the Low Baseline Alternative are expected to be severe because of the high level of demand generated by natural population growth that would intensify current (1987) inadequate conditions, including crowded housing, and the high level of expenditures that would be needed to meet Low Baseline demands.

Water and Sewer

Table 4A-3 provides information on water and sewage services required to meet Native American population increases. By 2005, water availability would need to increase by 202,400 gallons a day, water storage by 337,300 gallons, and sewage treatment by 134,900 gallons a day. Even if no additional housing is developed, it is likely that the doubling or tripling of families in existing housing could cause existing marginally adequate systems to be stressed to meet the needs associated with the Low Baseline Alternative.

The effects on water and sewer systems under the Low Baseline Alternative depend on whether additional housing is built. If HUD funds are obtained for housing, IHS funding would also be made available for matching sewer and water systems. If additional housing is not built, effects to existing water and sewer systems are expected to be moderate due to the Reservation population increase and current (1987) system problems.

Solid Waste

On the Reservation, solid waste is held at canister sites prior to being shipped to off-Reservation dumps. The population increase associated with the Low Baseline Alternative would put increased pressure on the Tribe to build a canister site at Birney Village and to relocate and/or rebuild the Lame Deer canister site. One canister would be needed at the Birney Village site by the year 2005. Three additional canisters would be needed at the various other canister sites on the Reservation (Lame Deer, Busby, Muddy, Ashland Village) by the year 2005. The current problems with canister sites, (i.e., equipment, maintenance, personnel, high waste disposal costs, and fires) would probably continue. The effects on solid waste disposal from the Low Baseline Alternative are moderate because of the increases in capital and operating expenditures that would be needed.

Education

A total of 436 additional school students in grades 1 through 12 are projected to reside on the Reservation by the year 2005 under the Low Baseline Alternative. Reservation students currently have a variety of school options available to them; see Chapter 3, Section 3.6.N for a detailed discussion of these options. By 2005, there would be a demand for an additional 11 teachers and 20,500 square feet of school building space at Lame Deer Elementary and Busby Tribal Schools. These figures assume Reservation students would continue to attend Lame Deer Elementary and Busby Tribal School in their 1987 proportions: 55 percent for grades 1 through 8 and 25 percent for grades 9 through 12. See Technical Report 3 for a discussion of how Reservation student numbers were calculated. Reservation students in the various off-Reservation schools would generate a demand for 13.5 teachers and 26,700 square feet of school space by 2005.

The current problems at all schools, particularly at the high school level, of students frequently switching between

schools and high dropout rates would continue. Northern Cheyenne students would most likely continue to attend off-Reservation schools, such as Colstrip, that offer little involvement with Northern Cheyenne culture or language, long daily commutes over poor roads and a lack of extracurricular involvement by students and parents because of the long distance between school and home. Effects on education are expected to be moderate under the Low Baseline Alternative because of increased students in Reservation schools and a larger number of students attending off-Reservation schools.

Health Care

By the year 2005, an additional 1.5 physicians, 1 half-time dentist, and 3.5 nurses would be needed to meet increased medical care demands for Reservation Native Americans. There is currently no major medical care available on the Reservation. The Crow Agency Hospital, which serves the Northern Cheyenne Reservation, would have an increased demand for services due to population growth on the Northern Cheyenne Reservation. Additional Contract Health Service (CHS) funding from IHS would have to be made available so Native Americans could receive major medical care off-Reservation (currently there is a large deficit in this type of funding). By 2005, an additional 5.5 hospital beds (half at Crow Agency Hospital and half at regional hospitals; see Technical Report 3) would be needed to meet Northern Cheyenne Reservation Native American demand.

There would also be a demand for more alcoholism and drug abuse treatment services due to Reservation population growth. This increase in alcoholism and drug abuse would not only generate an increased demand for addiction treatment but would be associated with increases in alcohol-related diseases, accidents, suicides, and other violent behaviors, all of which would increase health care service demands.

No medical services are currently available to non-Native Americans on the Reservation except for urgent care and ambulance service. That situation would likely continue.

Under the Low Baseline Alternative, the total number of ambulance calls would increase 35 percent (333 calls annually) over current (1987) levels by 2005. The number of ambulance calls in response to traffic accidents is forecasted to rise from 8 to approximately 11 calls a month by 2005. The existing number of ambulances would be adequate to meet the increased demands, but crew sizes would need to be increased (Chapter 3, Section 3.6.N). In response to the additional demand, the ambulance service may decide to station ambulances in outlying communities to reduce response time, rather than housing them all in Lame Deer.

Demand for urgent medical services, which are available to Native Americans and non-Native Americans from Lame Deer Clinic, would expand with the increase in population and Reservation road usage. The number of people treated at the Lame Deer Clinic in response to motor vehicle accidents (estimated to be 100 in fiscal year 1986) would probably increase to 135 (a 35 percent increase) by the year 2005. If the traffic increases cause more accidents involving Native Americans, the need for CHS funding would also increase so that treatment for serious injuries could be provided off-Reservation.

Overall, the effects of the Low Baseline Alternative on Reservation health care are expected to be severe because of the demand created by a 35 percent increase in Native American population (between 1987 and 2005), the importance of these services, and the level of expenditures necessary to meet the demand.

Law Enforcement

Under this Low Baseline Alternative, five additional police officers and two police vehicles would be needed by the year 2005. This would be created by Reservation population growth and corresponding increases in Reservation traffic. In addition, population growth from on-Reservation natural increase would result in more cases being brought before the already backlogged Tribal Court system (see Chapter 3, Section 3.6.N). The effect on law enforcement on the Reservation from the Low Baseline Alternative is expected to be moderate to severe because of the high levels of demand created in an already stressed situation and the expenditures necessary to meet the demands.

Fire Protection

Population growth under the Low Baseline Alternative and the coincident potential increase in structural fires may lead to a demand for organized structural fire protection on the Reservation. This demand could mean providing vehicles in each community and increasing the number and training of volunteer firefighters. With additional traffic on the Reservation, there may be an increase in vehicle fires on the road system or fires adjacent to the roads caused by vehicles. Without the organized structural fire protection program, structural fire protection on the Reservation would be inadequate; any additional demand would make the situation worse.

Higher recreational use of the Reservation by Native Americans and increased use of the canister sites (where numerous fires have occurred (Feeney, et al., 1986)), both due to population increase, could cause more range and forest fires. If a significant increase occurred in the number of fires, the BIA Forestry Program firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these effects is unknown.

Roads

Increases in the use of Reservation roads were not quantified because it is very difficult to project road use based solely on population increase. The primary roads (U.S. 212 and Montana 39) generally have low sufficiency ratings based on a combination of road conditions, capacity, safety, and other rating characteristics (Feeney, et al., 1986). This is of particular concern because of the large

number of school buses that cross the Reservation each day. Some of the primary roads are currently in poor condition and are scheduled for resurfacing and/or reconstructing in the mid-1990s, subject to future State Highway Department priorities and funding availability (Sioux, 1987). However, even if the repairs are done, increased use of these roads due to Reservation population growth would lead to higher maintenance costs, more accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents. Mild effects on roads are expected due to the significant population increase.

Recreation

Under the Low Baseline Alternative, there would be an increase in usage of Reservation recreational facilities because of Native American population growth on the Reservation. An additional two compliance officers, to police recreation areas, would be needed to meet the increase. These effects are expected to be mild.

Social Services

The natural population growth projected under this alternative would place substantial pressure on the already inadequately staffed Reservation social service system which provides such services as child welfare and general assistance. Three additional social workers, in addition to the six currently (1987) needed, would be required to meet the increased population needs of the Low Baseline Alternative. If the Reservation population growth results in increased stress on families, creating poverty and abuse situations, the demand could rise at an even higher rate than expected. These effects are expected to be moderate.

Other Services

Reservation population growth would lead to increasing pressures on a variety of other services such as care for the elderly and Dull Knife Memorial College. Most reservation services are currently experiencing funding shortages and may find it very difficult to expand services for a rapidly growing population. Mild effects on Dull Knife Memorial College would occur due to the Reservation population increase.

4A.1.7N Social Organization

Community social organization refers to the structures and processes that organize how people in a community relate to one another. The *Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity, outside ties, distribution of resources/power, coordination and cooperation among people in the community, and patterns of personal interaction. These characteristics are used to discuss effects to social organization. Technical report 6 provides a discussion of how this section was developed.

Under the Low Baseline Alternative, mild effects to social organization would occur on the Northern Cheyenne Reservation because of the following factors: (1) a 35 percent increase in Native American population on the Reservation between 1987 and 2005, which would cause increasing poverty (see Chapter 4, Section 4A.1.8N), (2) population increases in areas adjacent to the Reservation (e.g., the populations of Colstrip and Sheridan would increase by approximately 22 percent and 43 percent, respectively, above 1987 levels by 2005), and (3) increased traffic across the Reservation.

Changes in social structure that have been occurring for the past 15 years would continue at approximately the same rate (see Chapter 3, section 3.7N). The Reservation population would continue to become more diverse; however, the Northern Cheyenne sense of Tribal identity would remain strong. Declines in social well-being (see Chapter 4, Section 4A.1.8N) could lead to increasing conflict among individuals and groups on the Reservation.

4A.1.8N Social Well-Being

Under the Low Baseline Alternative, changes would occur in social well-being due to changes in availability of services and facilities; stress caused by changes in social organization and cultural conditions; and increases in unemployment and poverty. There would be moderate to severe stress on Reservation facilities and services due to on-Reservation and regional population growth. The demand for housing would force the doubling or tripling of families in existing dwellings. It is unlikely employment levels would increase as rapidly as population; therefore, unemployment and poverty levels would rise. Increased stress on individuals associated with housing crowding and service/infrastructure shortfalls could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Social conflicts and increasing poverty could lead to more crimes against people and property. Increased alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. In addition, there is also concern that alcohol and drug abuse affects the ability of Northern Cheyenne people to practice their traditional religion and of parents to teach their children the Cheyenne way. It should be noted that the aforementioned housing crowding may not be entirely negative because extended families may live together, and as in the past, offer support and share household expenses.

Moderate to severe changes in social well-being are expected with the Low Baseline Alternative due to stresses on services and increasing poverty. See Technical Report 6 for a discussion of how this section was developed. See Cultural Conditions, Section 4A.1.9N for related information on effects to culture under the Low Baseline Alternative.

4A.1.9N Cultural Conditions

Several effects to Northern Cheyenne cultural values already described in the context of the High Baseline Alternative (Section 4.1.9N) are also applicable to the Low Baseline Alternative. These would occur because of disturbances from ongoing activities at existing mines in the study area. These effects are: (1) the transformation of Earth-Surface Dome into Dead Earth and the consequent destruction of spiritual attributes of the environment, (2) continued destruction of spirits at Colstrip, (3) continued physical/spiritual pollution from Colstrip which would upset the balance of the spiritual and matter/substance in the universe and force Northern Cheyenne plant collectors to change the areas they collect from, and (4) change in the distribution and density of ritually significant bird and mammal species which may make their acquisition more difficult. Effects to cultural conditions would be moderate to severe under Low Baseline Alternative development.

4A.1.1C Employment

The 1986 employment level on the Crow Reservation is estimated at 752 full-time equivalent (FTE) jobs. The forecasted employment level for the Crow Reservation for the Low Baseline Alternative is expected to remain unchanged through 2005.

4A.1.2C Population

Population growth on the Crow Reservation would be significant between 1987 and 2005. This would be primarily because of the natural increase (births minus deaths) on the Reservation. The total projected population of the Reservation under this Alternative for selected years is shown in Table 4A-5.

Growth in nearby off-Reservation communities can affect the Crow Reservation. However, due to the poor economy, the population in the Montana portion of the Powder River Region as a whole is projected to grow slowly under the Low Baseline Alternative. The population of Billings is projected to grow at a rate of 1 percent a year while the rest of the communities in the Montana portion of the region outside of the Reservation are expected to maintain their present populations, lose population, or grow slowly. As an example, Hardin is projected to grow by 9 percent in the period between 1987 and 2005.

TABLE 4A-5
PROJECTED POPULATION
LOW BASELINE ALTERNATIVE
Crow Reservation

Year	Native American	Non-Native American	Total	Percentage Increase Over 1987
1987	5826	1837	7663	0
1990	6074	1837	7911	3
1995	6511	1837	8348	9
2000	6980	1837	8817	15
2005	7483	1837	9320	22

Source: BLM, 1988

4A.1.3C Income

Household income on the Crow Reservation under the Low Baseline Alternative is estimated to be $37,400,000 in 1986. Business activity under the Low Baseline in 1986 is estimated to be $13,800,000. The projected levels for household income and business activity for the period from 1986 through 2005 would remain at the 1986 level. These household income and business activity levels, coupled with the projected growth in population, mean that residents on the Crow Reservation are expected to be economically worse off in 2005 than they were in 1987.

4A.1.4C Tribal Fiscal Conditions

Revenue

The Tribe does not tax persons, income, or property, so any increases in population or income on the Reservation would not lead to an increase in Tribal revenue. Therefore, population growth associated with the Low Baseline Alternative would not affect revenues of the Crow Tribe.

Expenditures

Increases in demand for services would require an increase in expenditures. Information on the expenditures needed to provide adequate services for the natural population increase on the Crow Reservation population is discussed in Chapter 4A, Section 4A.1.6C.

In conclusion, the Low Baseline Alternative would not significantly affect the current level of Tribal revenues, while needed expenditures from population growth are expected to increase over the long term.

4A.1.5C Tribal Government

The natural population growth on the Crow Reservation would increase the pressure on Tribal government to provide for increased levels of service. These demands could put significant strains on the financial resources of the Crow Tribe.

4A.1.6C Housing, Services, Infrastructure

This section describes the expected future conditions of housing, services, and infrastructure on the Crow Reservation due to population growth associated with the Low Baseline Alternative, including natural population increase. Natural population increase (births minus deaths) is high among Native Americans on the Crow Reservation. Between 1987 and 2005, Native American population increase on the Reservation is projected to be 28 percent.

The increased service demands and the associated increased expenditures and annual operating costs

expected on the Crow Reservation, as a result of the Low Baseline Alternative, are discussed in the remainder of this section. Natural population growth accounts for all of the increase in service demands under the Low Baseline Alternative.

The service-demand estimates and associated cost estimates are based on changes over and above 1987 levels and represent providing adequate service to that increment of population change resulting from the Low Baseline Alternative. The service demand values are calculated using regional service-demand coefficients that have been adapted for the Reservation. The expenditure values were calculated using regional and/or Reservation cost estimators. Those are both described in Technical Report 3.

Housing

Housing demand would be very high under the Low Baseline Alternative; 331 additional units that could house families would be needed by 2005 to accommodate the population growth projected to occur between 1987 and 2005. It is unlikely the current (1987) deficiency of 721 units would be met by 2005, much less the provision of 331 additional units. In addition, population growth in the off-Reservation community of Hardin due to natural increase (expected to rise 9 percent over 1987 figures by 2005), could increase the demand for rental housing in the Hardin area. If rental housing prices increase there, some Native Americans currently living in the Hardin area may be forced to return to the Crow Reservation to reside with family and/or friends. Currently (1987), there is excess housing for both rent and purchase in Hardin, but not enough to provide housing for the projected population increase.

Effects on Reservation housing are expected to be severe because of the high level of demand generated by natural population increase (Native American population is projected to increase 28 percent between 1987 and 2005), and the possibility of people relocating from Hardin to the Reservation because of changes in rental housing availability and cost in Hardin. This would increase the incidence of crowded housing and adversely affect current (1987) inadequate housing conditions. The expenditures necessary to meet the Low Baseline demand for housing in 2005 would total $21,515,000 (in 1985 dollars) for capital expenditures.

Water, Sewer, and Solid Waste

There would be no significant effect to the water, sewer, or solid waste services on the Crow Reservation from any of the leasing alternatives. Therefore, these services are not discussed under the Low Baseline.

Education

Schools located on the Reservation are not discussed because no effects are expected from any of the three leasing alternatives. However, Hardin schools, which are attended by a large number of Reservation students, would be affected by the implementation of the leasing alternatives and, therefore, are discussed under Low Baseline conditions. Of the additional 530 students estimated to reside on the Reservation in 2005 with Low Baseline conditions, 198 or 37 percent of these students would attend Hardin elementary and secondary schools. By 2005, 92 additional students would attend Hardin schools due to natural increase in the Hardin area. These 290 students represent an increase of 23 percent over 1987 numbers and would necessitate an additional 16 teachers and 32,600 square feet of school space at the elementary and secondary schools by the year 2005. Current (1987) problems at these schools, such as the high Native American student dropout rate, interracial conflict, lack of Crow culture and language programs, lack of Native American teachers to act as role models, and lack of intercultural programs to promote understanding between the different cultures are expected to continue under the Low Baseline Alternative. Mild to moderate effects on the education of Reservation students who attend Hardin schools are expected due to the sizeable increase in total numbers of students at Hardin schools (23 percent over 1987 levels by 2005) and the problems cited above.

Health Care

Health care needs generated by the Low Baseline Alternative include 1.5 doctors, 1 physician's assistant, 1 dentist, and 3.5 outpatient nurses by the year 2005. Additional Contract Health Service (CHS) funding from IHS would have to be made available so Native Americans could receive health care off-Reservation that is not available through the hospital and clinic. The need for this type of funding would be decreased if the proposed hospital is completed on the Reservation. By 2005, an additional seven hospital beds would be needed to meet Crow Reservation Native American demand, as well as six beds to meet demand generated by Northern Cheyenne Reservation Native Americans. Half of these beds would be needed at Crow Agency Hospital and half at regional hospitals; see Technical Report 3. Pressure may also be placed on Crow Agency Hospital outpatient services to handle outpatient overflow from the Lame Deer Clinic, due to population increase on the Northern Cheyenne Reservation.

Demand for alcoholism and drug abuse treatment services would increase due to Reservation population growth. The rise in alcohol and drug abuse would not only generate a higher demand for addiction treatment, but would also be associated with more alcohol-related diseases, accidents, suicides, and other violent behaviors, all of which increase health care service demands.

No medical services are currently available to non-Native Americans on the Reservation except for emergency care and ambulance service. That situation would continue under the Low Baseline Alternative.

Under the Low Baseline Alternative, increased demands would be placed on the ambulance service, due to Reservation population growth. These demands may necessitate an additional ambulance and/or ambulance crews to maintain adequate coverage. Demand for emergency med-

ical services, which are available to Native Americans and non-Native Americans from the Crow Agency Hospital, would also expand with the increase in population and Reservation road usage. The number of people treated by the Crow Agency Hospital in response to motor vehicle accidents would increase by at least 28 percent from 1987 to the year 2005.

Overall, the effect on Reservation health care is expected to be severe because of the high levels of demand created in an already stressed situation. A 28 percent increase is expected in Crow Reservation Native American population and a 35 percent increase in Northern Cheyenne Reservation Native American population between 1987 and 2005. The level of expenditures required to provide adequate service for Crow Reservation residents in 2005 would be capital expenditures of $716,000 (1985 dollars) for Crow Agency hospital beds, and operating expenditures of $1,078,000 annually (1985 dollars) for the hospital, CHS funds, and ambulance services. Expenditures for alcohol and drug abuse services are not included in the estimate.

Law Enforcement

Under the Low Baseline, 5.5 additional police officers and 2 police vehicles would be needed by the year 2005. This need would be created by the increases in Reservation population. In addition to the demand created directly by Reservation population growth, the police may need to respond to more traffic accidents due to increased Reservation traffic; more crime associated with increases in alcohol and drug abuse and poverty; more trespassing due to regional population growth; and more disputes involving Native Americans and non-Native Americans. The Tribal Court system would see an increase in cases, particularly those related to crimes cited above. The problems associated with multiple legal jurisdictions (see Chapter 3, Section 3.6.N) would further complicate the situation.

The effect on law enforcement on the Reservation from the Low Baseline Alternative is expected to be moderate to severe because of the increased levels of demand created in an already stressed situation. Annual expenditures needed to meet the increased demand for law enforcement officers would be capital costs of $98,000 (1985 dollars), and annual operating costs of $121,000 (1985 dollars).

Fire Protection

The increase in automobile traffic, and possible increase in trespass on the Reservation, could cause more range and forest fires. If a significant increase occurred in the number of fires, firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these effects is unknown.

Roads and Railroads

Under the Low Baseline Alternative, both I-90 and U.S. 212 would sustain an unquantified increase in traffic between 1987 and 2005, due to population growth on the Reservation and in Sheridan and Hardin. Depending on the magnitude of these increases, there could be accompanying increases in road maintenance costs and accidents, and the possible use of Reservation fire, police, and ambulance, and emergency medical services to deal with accidents. Mild effects to Reservation roads are expected under the Low Baseline Alternative. Rail use is not expected to change under the Low Baseline Alternative.

Recreation

Under the Low Baseline Alternative, use of recreational facilities on the Reservation would increase because of Native American population growth on the Reservation and the higher usage of the Reservation by people living off-Reservation. There could also be an increase in poaching, littering, trespassing, and conflicts over recreation resources and facility use. Mild effects to Reservation recreation are expected from the Low Baseline Alternative.

Social Services

Natural population growth projected under this Low Baseline Alternative would require the addition of 4.5 social workers by 2005. If the increases in population both on and off the Reservation result in more alcoholism, drug abuse, and stress on families (creating loss of employment, and family violence situations), the demand for social services could increase at an even higher rate than expected. This effect would be moderate, given the size of the Native American population increase (28 percent between 1987 and 2005). Expenditures necessary to meet Low Baseline demands would be operating costs of $99,000 annually (1985 dollars) for additional social workers.

Other Services

Increases in on and/or off-Reservation population as a result of the Low Baseline Alternative would create more pressures on a variety of other services such as care for the elderly and Little Big Horn Community College. Most Reservation services are currently experiencing funding shortages so they may find it very difficult to expand services for a rapidly growing population. For example, Little Big Horn Community College may see an increase in non-Native American students from off-Reservation communities such as Hardin, but would receive no funding from the state or federal government for these students. Mild effects on Little Big Horn Community College from the Low Baseline Alternative are expected because of Reservation and regional population growth.

4A.1.7C Social Organization

Community social organization refers to the structures and processes that organize how people in a community relate to one another. The *Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community.

These characteristics include: diversity/complexity, outside ties, distribution of resources/power, coordination and cooperation among people in the community, and patterns of personal interaction. These characteristics are used to discuss effects to social organization. Technical Report 6 provides a discussion of how this section was developed.

Social organization on the Crow Reservation, under the Low Baseline Alternative, would be affected by the following factors: (1) a 28 percent increase in Native American population on the Reservation between 1987 and 2005, which would cause increasing poverty (see Section 4A.1.8C of this chapter); (2) population increases in areas adjacent to the Reservation (e.g., the populations of Hardin and Sheridan would increase by approximately 9 percent and 43 percent, respectively, above 1987 levels by 2005); and (3) increased traffic across the Reservation.

Under the Low Baseline Alternative, changes in social organization that have been occurring for the past 15 years, would continue at approximately the same pace (see Chapter 3, Section 3.7C). The Reservation population would continue to become more diverse; however, the Crow sense of Tribal identity would remain strong.

The declines in social well-being that would occur under the Low Baseline Alternative could lead to increasing conflict among groups and individuals on the Reservation. Overall, mild impacts to Crow social organization are expected.

4A.1.8C Social Well-Being

Under the Low Baseline Alternative, changes would occur in social well-being due to changes in availability of services and facilities; stress caused by changes in Reservation social structure and social conflicts; changes in cultural conditions; and increases in unemployment and poverty. Reservation facilities and services would be mildly to severely stressed due to on-Reservation population growth. It is unlikely employment levels would increase as rapidly as population; therefore, unemployment and poverty levels would rise. The demand for housing would force the doubling or tripling of families in existing housing. Increased stress on individuals associated with changes in social organization, housing crowding, service/infrastructure shortfalls, and increased availability of drugs could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Social conflicts and increasing poverty could lead to more crimes against people and property. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. In addition, there is concern that alcoholism and drug abuse make it difficult to practice the traditional culture. Moderate changes in social well-being are expected under the Low Baseline Alternative due to stresses on services and increasing poverty. (See Technical Report 6 for a discussion of how this section was developed.) See Cultural Conditions, Section 4A.1.9C, for related information on effects to culture under the Low Baseline Alternative.

4A.1.9C Cultural Conditions

Several of the effects to Crow cultural values already described in the context of the High Baseline Alternative (Section 4.1.9C) are applicable to the Low Baseline Alternative. These would occur as a result of disturbances from ongoing activities at existing mines in the study area. These effects are: (1) changes to the *baxpe* qualities of the environment, (2) lessening of the physical beauty of the environment, (3) lessening of the seclusion and privacy required for fasting and other religious activities, (4) possible changes in Crow access to raptor and eagle feathers, and (5) continuing disturbance of archaeological properties with ethnic and religious significance to the Crow (especially in the context of Absaloka and Spring Creek Mines). Effects to Crow cultural conditions would be moderate under Low Baseline Alternative conditions.

4A.2 IMPACTS OF LEASING ALTERNATIVES

This section of Chapter 4A describes the impacts to the Northern Cheyenne and Crow Tribes from the three Round I Federal Coal Leasing Alternatives 2A, 2B, and 4. This Chapter uses the Low Baseline Alternative (described in the previous section) as the region's baseline energy future. Any changes presented in the following tables represent changes over the Low Baseline Alternative. (Note: Chapter 4 uses the High Baseline Alternative as the region's baseline energy future.) The federal coal tracts contained in each of the three leasing alternatives are shown in Table 4A-6 along with their associated tonnages, start dates, and employment levels.

TABLE 4A-6
TRACT INFORMATION — BY ALTERNATIVE

Tracts	Assumed Annual Production [1]	Assumed Start Dates		Direct Peak Employment[2]
		Construction	Operations	
NEW MINE TRACTS				
Leasing Alternative 2A:				
Cook Mountain	6.4	1994	1996	212
Coal Creek	4.1	1996	1998	136
Northwest Otter Creek	10.3	1998	2000	341
Leasing Alternative 2B:				
Coal Creek	4.1	1996	1998	136
Northwest Otter Creek	10.3	1998	2000	341
Leasing Alternative 4:				
Coal Creek	4.1	1996	1998	136
Cook Mountain	6.4	1994	1996	212
Ashland (Decker-Birney)	9.1	1999	2001	305
Northwest Otter Creek	10.3	1998	2000	341
Southwest Otter Creek	10.0	1998	2000	334
EXPANSION/EXTENSION TRACTS[3]				
Leasing Alternatives 2A, 2B, and 4:				
Colstrip A&B		Currently being mined		No change
Colstrip C		Currently being mined		No change
Colstrip D		1988	1988	No change
North Decker		1998	1999	No change
Spring Creek		1999	2000	No change
West Decker		1996	1997	No change

[1] Millions of tons per year
[2] Would occur during operations phase
[3] The six expansion/extension tracts are included in all three leasing alternatives

Source: Company estimates; BLM, 1988

4A.2.1N Employment

Employment on the Northern Cheyenne Reservation would increase under each of the three leasing alternatives. The total direct employment level of workers on these tracts forecasted to reside on the Northern Cheyenne Reservation is shown in Table 4A-7 for Leasing Alternatives 2A, 2B, and 4. For example, a total of 5 Native Americans and 10 non-Native Americans residing on the Reservation are forecasted to be employed in construction in 1995 with Leasing Alternative 2A; in the year 2000, total construction employment would increase to 11 Native Americans and 21 non-Native Americans.

In addition to direct employment, the development of each of the three leasing alternatives would lead to indirect employment within the Montana portion of the Powder River Region. While jobs associated with direct employment from each of the three leasing alternatives occur in the off-Reservation federal coal tracts, indirect jobs associated with these projects could occur either on or off the Reservation and would be associated mainly with the retail trade, construction, and service sectors. Table 4A-8 shows changes in indirect, direct, and total forecasted employment levels (for those workers residing on the Reservation) resulting from Leasing Alternatives 2A, 2B, and 4. For example, estimated employment of those indirect workers residing on the Reservation in 1995 would be two Native Americans and one non-Native American from Leasing Alternative 2A. Indirect employment would increase until 2005 when it stabilizes at 38 Native Americans and 27 non-Native Americans employed in jobs which are indirectly related to the development from Leasing Alternative 2A.

Northern Cheyenne Reservation employment increases significantly for each of the Leasing Alternatives under the Low Baseline Alternative. Leasing Alternative 4 shows the largest increase at 37 percent, while Leasing Alternative 2B has the smallest increase at 20 percent in 2005.

4A.2.2N Population

Population levels on the Northern Cheyenne Reservation would increase with each of the three leasing alternatives. Leasing Alternative 4 is expected to create the greatest total population growth on the Reservation and 2B the least. Table 4A-9 shows the forecasted Reservation population totals from 1987 to 2005 for Leasing Alternatives 2A, 2B, and 4.

TABLE 4A-7
CHANGES IN DIRECT EMPLOYMENT[1] — EMPLOYEES RESIDING ON RESERVATION
Northern Cheyenne Reservation

Year	Construction		Operation		Total	
	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
LEASING ALTERNATIVE 2A						
1990	0	0	0	0	0	0
1995	5	10	0	0	5	10
2000	11	21	15	19	26	40
2005	0	0	26	30	26	30
LEASING ALTERNATIVE 2B						
1990	0	0	0	0	0	0
1995	0	0	0	0	0	0
2000	11	23	7	12	18	35
2005	0	0	18	28	18	28
LEASING ALTERNATIVE 4						
1990	0	0	0	0	0	0
1995	5	10	0	0	5	10
2000	23	33	17	15	40	48
2005	0	0	43	38	43	38

[1] Changes measured against Low Baseline Alternative. Employment of Reservation residents, jobs would occur off-Reservation at mine sites.

Source: BLM, 1988

TABLE 4A-8
EMPLOYMENT OF RESERVATION RESIDENTS[1]
Northern Cheyenne Reservation

Year	Changes Over Low Baseline						Total [2] Employment	Low Baseline Total
	Indirect		Direct		Totals			
	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American		
				LEASING ALTERNATIVE 2A				
1990	0	0	0	0	0	0	469	469
1995	2	1	5	10	7	11	487	469
2000	32	18	26	40	58	58	585	469
2005	38	27	26	30	64	57	590	469
				LEASING ALTERNATIVE 2B				
1990	0	0	0	0	0	0	469	469
1995	0	0	0	0	0	0	469	469
2000	17	14	18	35	35	49	553	469
2005	31	19	18	28	49	47	565	469
				LEASING ALTERNATIVE 4				
1990	0	0	0	0	0	0	469	469
1995	2	1	5	10	7	11	487	469
2000	41	17	40	48	81	65	615	469
2005	64	29	43	38	107	67	643	469

[1] Employment of Reservation residents. Indirect jobs could occur either on or off-Reservation, direct jobs would occur off-Reservation at mine sites. Direct jobs include construction and operations employment.
[2] Includes Low Baseline and leasing alternative employment and represents the cumulative employment impact.

Source: BLM, 1988

TABLE 4A-9
TOTAL POPULATION
Northern Cheyenne Reservation

Year	Native American	Non-Native American	Total[1]	Low Baseline	Percentage Increase Over Low Baseline
			LEASING ALTERNATIVE 2A		
1987	3,806	565	4,371	4,371	0
1990	4,004	565	4,569	4,569	0
1995	4,436	583	5,019	4,921	2
2000	5,207	694	5,901	5,304	11
2005	5,672	720	6,392	5,720	12
			LEASING ALTERNATIVE 2B		
1987	3,806	565	4,371	4,371	0
1990	4,004	565	4,569	4,569	0
1995	4,356	565	4,921	4,921	0
2000	5,139	674	5,813	5,304	10
2005	5,599	699	6,298	5,720	10
			LEASING ALTERNATIVE 4		
1987	3,806	565	4,371	4,371	0
1990	4,004	565	4,569	4,569	0
1995	4,436	583	5,019	4,921	2
2000	5,243	697	5,940	5,304	12
2005	5,791	731	6,522	5,720	14

[1] The sum of Low Baseline and leasing alternative population which represents the cumulative population impact.

Source: BLM, 1988

The majority of the development-related Native American population increase under each of the three leasing alternatives is due to the return of Native Americans who currently live off-Reservation. These Native Americans would move to the Reservation in search of the benefits of regional development. The number of Native Americans returning in search of employment under the leasing alternatives is uncertain. It is estimated for analysis purposes that between 200 and 250 Native Americans would return under Leasing Alternatives 2A and 2B, and between 250 and 300 would return under Leasing Alternative 4. These levels represent approximately 14 percent of the Northern Cheyenne projected to be living off-Reservation at the time development begins for Leasing Alternatives 2A and 2B, and 16 percent for Leasing Alternative 4. (See the Technical Report 2 for further discussion about how return-migration was forecasted.)

The communities of Lame Deer and Ashland Village (Map 3, map packet) are expected to experience the greatest population gains under all three leasing alternatives because of their proximity to the new mine tracts. Tables 4A-10, 4A-11, and 4A-12 show forecasted community-specific population changes from 1990 to 2005 for Leasing Alternatives 2A, 2B, and 4, respectively. These numbers represent only the change in population associated with either direct or indirect employment opportunities. Natural increase of the Reservation population is not included in the community-specific tables. Determining where Northern Cheyenne who return to find work, but are unable to, would live on the Reservation cannot be reliably estimated. Consequently, the numbers in Tables 4A-10, 4A-11, and 4A-12 undercount the population growth associated with the leasing alternatives.

TABLE 4A-10
COMMUNITY SPECIFIC POPULATION CHANGE[1] — LEASING ALTERNATIVE 2A
Northern Cheyenne Reservation

	1990		1995		2000		2005	
Community	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
Ashland Village	0	0	2	11	10	70	15	87
Birney Village	0	0	0	1	0	4	0	6
Busby	0	0	0	0	2	5	2	6
Lame Deer	0	0	1	6	6	46	8	53
Muddy	0	0	0	0	0	4	2	3
TOTAL	0	0	3	18	18	129	27	155

[1] Represents only the population change associated with direct and indirect employment. Changes are measured against the Low Baseline Alternative.

Source: BLM, 1988

TABLE 4A-11
COMMUNITY SPECIFIC POPULATION CHANGE[1] — LEASING ALTERNATIVE 2B
Northern Cheyenne Reservation

	1990		1995		2000		2005	
Community	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
Ashland Village	0	0	0	0	4	59	8	73
Birney Village	0	0	0	0	0	3	0	5
Busby	0	0	0	0	0	5	2	5
Lame Deer	0	0	0	0	3	39	5	48
Muddy	0	0	0	0	0	3	0	3
TOTAL	0	0	0	0	7	109	15	134

[1] Represents only the population change associated with direct and indirect employment. Changes are measured against the Low Baseline Alternative.

Source: BLM, 1988

TABLE 4A-12
COMMUNITY SPECIFIC POPULATION CHANGE[1] — LEASING ALTERNATIVE 4
Northern Cheyenne Reservation

	1990		1995		2000		2005	
Community	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
Ashland Village	0	0	2	11	15	64	24	87
Birney Village	0	0	0	1	0	7	1	7
Busby	0	0	0	0	4	7	3	7
Lame Deer	0	0	1	6	11	50	17	60
Muddy	0	0	0	0	0	4	1	5
TOTAL	0	0	3	18	30	132	46	166

[1] Represents only the population change associated with direct and indirect employment. Changes are measured against the Low Baseline Alternative.

Source: BLM, 1988

In addition to population growth on the Northern Cheyenne Reservation, communities nearby, but off Reservation, would see population growth from development associated with the three leasing alternatives. Population growth in these off-Reservation communities could affect Reservation services such as roads and law enforcement, Tribal government and social organization, among others. Those impacts generated from off-Reservation population growth are described in Chapter 4A, Sections 4A.2.5N, 4A.2.6N, 4.2.7N, and 4.2.8N. Table 4A-13 shows population increases in communities near the Reservation during the period 1990 to 2005 from development associated with Leasing Alternatives 2A, 2B, and 4. For example, in 2000, the population of Ashland/St. Labre due to development of Leasing Alternative 2A would be 1,037 people more than the Low Baseline Alternative.

TABLE 4A-13
POPULATION CHANGE[1]
COMMUNITIES ADJACENT TO
NORTHERN CHEYENNE RESERVATION

	1990	1995	2000	2005
LEASING ALTERNATIVE 2A				
Ashland/St. Labre	0	98	1,037	1,369
Colstrip	0	5	41	48
Broadus	0	3	21	24
LEASING ALTERNATIVE 2B				
Ashland/St. Labre	0	0	525	642
Colstrip	0	0	28	35
Broadus	0	0	14	17
LEASING ALTERNATIVE 4				
Ashland/St. Labre	0	98	1,437	2,361
Colstrip	0	5	65	91
Broadus	0	3	34	46

[1] Changes are measured against the Low Baseline Alternative.

Source: BLM, 1988

Community-specific population values in this section were developed using a gravity model to apportion workers and families to both on and off-Reservation communities. That model is described in detail in Technical Report 2.

Increases in the population of the Northern Cheyenne Reservation for all three leasing alternatives over the Low Baseline Alternative would be significant. In 2005, population increases from Leasing Alternative 4 would be 14 percent, and for Leasing Alternative 2B, 10 percent. Increases in off-reservation population in Colstrip and Broadus for each leasing alternative would be 5 percent or less. The population change for the town of Ashland is expected to be severe under each of the leasing alternatives.

4A.2.3N Income

Household income on the Reservation would rise as a result of increased employment of Reservation residents due to each of the three leasing alternatives. Because of the greater employment and overall development associated with Leasing Alternative 4, it would generate the greatest increase in household income and business activity on the Reservation, a forecast almost double that for Leasing Alternative 2B. Table 4A-14 shows both totals and changes in household income and business activity for Leasing Alternatives 2A, 2B, and 4. For example, in 2005, household income on the Northern Cheyenne Reservation is forecasted to be $3,270,000 greater than the Low Baseline Alternative level of $16,260,000, a 20 percent increase under Leasing Alternative 2A.

Increases in household income on the Reservation do not proportionally increase Reservation business activity. For example, business activity on the Reservation in the year 2005 is forecasted to increase by $680,000; this represents less than 1 percent of the increase in total regional business activity resulting from Leasing Alternative 2A. This indicates a weak link between the economy of the Northern

TABLE 4A-14
HOUSEHOLD INCOME AND BUSINESS ACTIVITY
Northern Cheyenne Reservation

Year	Household Income				Business Activity			
	Low Baseline	Cumulative Impact[1]	Change[2]	Percentage Change[2]	Low Baseline	Cumulative Impact[1]	Change[2]	Percentage Change[2]
				LEASING ALTERNATIVE 2A				
1986	$17,960,000	$17,960,000	0	0	$16,700,000	$16,700,000	0	0
1990	16,260,000	16,260,000	0	0	15,650,000	15,650,000	0	0
1995	16,260,000	16,810,000	$550,000	3	15,650,000	15,760,000	$110,000	1
2000	16,260,000	19,170,000	2,910,000	18	15,650,000	16,250,000	600,000	4
2005	16,260,000	19,530,000	3,270,000	20	15,650,000	16,330,000	680,000	4
				LEASING ALTERNATIVE 2B				
1986	$17,960,000	$17,960,000	0	0	$16,700,000	$16,700,000	0	0
1990	16,260,000	16,260,000	0	0	15,650,000	15,650,000	0	0
1995	16,260,000	16,260,000	0	0	15,650,000	15,650,000	0	0
2000	16,260,000	18,460,000	$2,200,000	14	15,650,000	16,100,000	$450,000	3
2005	16,260,000	19,040,000	2,780,000	17	15,650,000	16,220,000	570,000	4
				LEASING ALTERNATIVE 4				
1986	$17,960,000	$17,960,000	0	0	$16,700,000	$16,700,000	0	0
1990	16,260,000	16,260,000	0	0	15,650,000	15,650,000	0	0
1995	16,260,000	16,810,000	$550,000	3	15,650,000	15,760,000	$110,000	1
2000	16,260,000	19,910,000	3,650,000	22	15,650,000	16,410,000	760,000	5
2005	16,260,000	21,140,000	4,880,000	30	15,650,000	16,660,000	1,010,000	6

[1] The cumulative impact is the sum of the Low Baseline and the change due to the Leasing Alternative.
[2] Changes in this column measured against the Low Baseline Alternative.

Source: BLM, 1988

Cheyenne Reservation and that of the rest of the Montana portion of the Powder River Region. In addition, a substantial portion of the household income (i.e., payroll dollars) on the Reservation is spent off the Reservation, and those dollars which are spent on the Reservation do not circulate long before flowing off the Reservation. Therefore, off-Reservation development is not expected to have a significant impact upon on-Reservation business activity under any of the three leasing alternatives (see Technical Report 1).

It is expected that large scale regional development would lead to increased price levels. Studies of price increases from past development (Feeney, et al., 1986) indicate that price levels have increased with large scale regional economic development in the Powder River Region of Montana. With this past record, it is likely that there would be an increase in the general price level on the Reservation due to off-Reservation coal development. As prices rise, those households on fixed incomes or whose income does not keep up with increasing price levels would experience a decline in purchasing power. In addition, private housing prices both on and off-Reservation are likely to increase (see Chapter 4, Section 4A.2.6N). More Reservation residents are likely to see declines in their standard of living relative to the rest of the region because fewer Reservation residents are expected to be able to take advantage of employment opportunities related to coal development. Given the proximity of the Northern Cheyenne Reservation to the new mine tracts and the distance from the Reservation to trade centers, such as Billings and Sheridan, the upward pressure on prices is expected to be moderate with either Leasing Alternative 2A or 2B and severe with Leasing Alternative 4.

Higher levels of household income on the Northern Cheyenne Reservation are significant for all three leasing alternatives over the Low Baseline Alternative. The percentage increase is highest for Leasing Alternative 4 at 30 percent and lowest for Leasing Alternative 2B at 17 percent in 2005. Changes in the level of business activity over the Low Baseline Alternative would be much smaller, ranging from 6 percent for Leasing Alternative 4, to 4 percent for Leasing Alternative 2B in 2005. Under each of the leasing alternatives, household income is forecasted to grow faster than the population of the Northern Cheyenne Reservation.

4A.2.4N Tribal Fiscal Conditions

Revenues

Tribal revenues are not expected to increase under any of the three leasing alternatives. Coal development off the Reservation would not generate revenues to the Tribal government, and other sources of revenue for Reservation projects and programs have disappeared as grant money from state and federal sources has diminished in the recent past.

The Tribe does not tax persons, property, or income on the Reservation, so any increases in population or income associated with the three leasing alternatives would not lead to increases in Tribal revenues. The weak economic link between the Northern Cheyenne Reservation and the rest of the Powder River Region of Montana (see I/O model description in Technical Report 1) indicates there would be little, if any, stimulus to Reservation businesses. Tribal budgets, highly dependent upon the sale/lease of Reservation resources, have been declining since 1983 and are expected to continue, at least until 1990. These factors continue to produce a bleak revenue picture for the Northern Cheyenne at a time when the Tribe would experience additional demands on Tribal services (see Chapter 4A, Section 4A.2.6N) due to impacts from the three leasing alternatives.

The development associated with Leasing Alternatives 2A, 2B, and 4 would not significantly affect Northern Cheyenne Tribal revenues.

The Northern Cheyenne Tribe has expressed concern that leasing of federal coal in the Powder River Region could adversely affect the value of Northern Cheyenne coal should the Tribe decide to develop their off-Reservation coal reserves. The following impact and analysis was done as a result of this concern.

Several points were considered in reaching a conclusion about possible impacts to Northern Cheyenne coal from leasing of federal coal tracts in Montana. These points are:

1. Northern Cheyenne coal is comparable in quality, quantity, and minability to both federal and fee coal in the Montana portion of the Powder River Region.

2. Recent exemption of the Montana coal severance tax and gross-proceeds tax on Indian coal would provide the Northern Cheyenne Tribe with more flexibility in negotiating coal contracts.

3. Opportunities for development of Northern Cheyenne coal have been at least equal, if not better, than those of federal coal because of three moratoriums on federal coal leasing during the last 17 years. Currently, there is no Powder River II regional coal sale scheduled.

4. Northern Cheyenne coal reserves have been and continue to be available for leasing primarily at the discretion of the Northern Cheyenne Tribe.

Based on these considerations, it is not expected that leasing of Montana's Round I tracts would adversely affect the value of Northern Cheyenne coal. However, Powder River Basin coal coming from northern Wyoming would also be in competition with Northern Cheyenne coal. Coal mining operations in the Gillette, Wyoming area have certain competitive advantages over coal operations in Montana, including Indian-owned coal. These advantages are:

1. The Wyoming new mine tracts leased at the 1982 Powder River sale, all in the Gillette area, contributed additional productive capacity to an area that currently has over-capacity through the year 2005. This would, if other things are equal, enhance northern Wyoming's ability to supply coal under new contracts.

2. Transportation costs could be more competitive from the Gillette area to Eastern and Southern markets because of competing railroad companies serving the Gillette area.

3. Mines in the Gillette area generally have thicker coal seams, less overburden, and lower mining costs.

4. In the past, Wyoming coal severance taxes were less than those on coal in Montana, including Indian coal. That condition no longer is true. Given the recent exclusion of state severance taxes on Indian coal in Montana, it is unlikely that Gillette area coal (which is likely to have severance taxes of some amount) would maintain a tax advantage over Indian coal from Montana.

It is not clear whether these advantages would be offset by the exemption of the Montana severance and gross-proceeds taxes on Indian coal. It is likely, however, that federal coal from Wyoming tracts would pose a greater threat to Northern Cheyenne coal value than would federal coal from Montana tracts. The number of existing and proposed mines and undeveloped leases in the Gillette area suggest that, at least in the past, this area had the competitive edge for the Midwestern, Front Range, and Gulf Coast markets. The relative competitiveness and marketability of Northern Cheyenne coal versus Gillette area coal would depend, to a great extent, on how successful the Northern Cheyenne are at identifying market areas and negotiating new contracts. See Technical Report 5 for a more detailed discussion of the possible impacts to Indian coal.

Expenditures

Increased population levels on and nearby the Northern Cheyenne Reservation from Leasing Alternative 2A, 2B, and 4, would create the need for more service expenditures. These expenditures, by leasing alternative, are described for the various affected services in Chapter 4A, Section 4A.2.6N. The needed expenditures are summarized in Chapter 4A, Section 4A.2.6N, Table 4A-19. Needed expenditures would require funding from many sources, including the Northern Cheyenne Tribe, BIA, IHS and HUD. It is unclear whether these agencies would be able to make additional funds available to meet these expenditure needs.

Expenditures needed to meet the higher demand for housing and services due to all these leasing alternatives would increase significantly. Expenditure needs includes both capital and operating costs. Increased expenditure needs are greatest for Leasing Alternative 4 and smallest for Leasing Alternative 2B.

In conclusion, the development of any of the three leasing alternatives would have no significant impact on the level of Tribal revenues, while needed expenditures for service demands due to each of the leasing alternatives are expected to increase significantly.

4A.2.5N Tribal Government

Development associated with the three leasing alternatives would affect Northern Cheyenne Tribal government

structure and function. In recent years, Tribal government has become more complex (Feeney, et al., 1986) and more involved in coordinating with outside governments. This was due, in part, to energy development in the Montana portion of the Powder River Region in the 1970s and 1980s. Population increases under each of the three leasing alternatives on and near the Reservation, especially in the Ashland/St. Labre area, would lead to more jurisdictional problems between Tribal government and state, county, and federal governments. The divided jurisdiction of law enforcement on the Reservation provides a good example. The Tribe does not have criminal jurisdiction over non-Native Americans, and jurisdiction over crimes committed by Native Americans on the Reservation generally depends upon the type of crime committed. With more non-Native Americans in the Reservation area, the need for coordination between BIA law enforcement and county and state law enforcement would increase. A summary of the levels of Native American and non-Native American population on the Northern Cheyenne Reservation in 2005 is shown on Table 4A-15.

The budgets of the BIA and the Northern Cheyenne Tribe have recently declined (Chapter 3, Section 3.4N) and are expected to continue to decline at the same time that Tribal government would need to deal with more complex issues and increased coordination. Therefore, the ability of the Tribe to respond to development would be further impaired. The Tribe currently provides a variety of social services, some of which are funded by BIA. As the population on the Reservation increases under each of the three leasing alternatives (see Chapter 4A, Section 4A.2.2N), Tribal members may request additional services and more support for existing services from the Tribal government. These demands would occur at a time when Tribal budgets would not allow expansion of services, a situation that could create additional conflict between the Tribal government and Tribal members.

The increased complexity of government would create a demand for more Tribal government employees. If additional funds can be obtained, Tribal employment is likely to increase. In addition, the Tribal office building which is currently in need of repair may have to be expanded to add office space if the Tribe is able to obtain funds to increase Tribal employment.

Increased government complexity on the Northern Cheyenne Reservation could mean a reduction in the amount of individual participation in government meetings by Tribal members. More issues are likely to be delegated to special committees where fewer Tribal members would participate. This could increase the feeling among some groups on the Reservation that their views are not being heard and that the government does not represent them. At the extreme, these feelings could lead to increased factionalism on the Reservation, resulting in more political disputes within the Tribe. Although impacts to Tribal government cannot be directly quantified, population growth, increased traffic, and other growth variables can be used as proxies for the likely level of impacts to Tribal government. The magnitude of these indicate that Northern Cheyenne Tribal government could be most significantly affected by Leasing Alternative 4, and to a lesser extent, by Leasing Alternative 2A or 2B. The cumulative impact of the Low Baseline Alternative and each of the three leasing alternatives would be greater than for any of the leasing alternatives alone.

4A.2.6N Housing, Services, Infrastructure

This section describes the impacts to housing, services, and infrastructure on the Northern Cheyenne Reservation due to population growth associated with the three leasing alternatives. In addition to population growth associated directly with mining and secondary employment, regional coal development is expected to stimulate a return-migration of Tribal members to the Reservation in search of employment. Inmigration of Native Americans in search of employment accounts for much of the increase in service demand under the three leasing alternatives. Because population change creates the majority of service-related impacts, a summary table of population levels, by leasing alternative, is presented below (Table 4A-15) for the year 2005. Chapter 4A, Section 4A.2.2N presents population information in greater detail.

Tables 4A-16, 4A-17, and 4A-18 show the increased demand on Reservation facilities and services for Leasing Alternatives 2A, 2B, and 4, respectively, during the period 1995 to

TABLE 4A-15
POPULATION TOTALS
Northern Cheyenne Reservation
2005

Low Baseline		Leasing Alt. 2A		Leasing Alt. 2B		Leasing Alt. 4	
Native Am	Non-Native	Native Am	Non-Native	Native Am	Non-Native	Native Am	Non-Native
5,155	565	5,672	720	5,599	699	5,791	731
Percentage Increase Over Low Baseline:		10	27	9	24	12	29

Source: BLM, 1988

TABLE 4A-16
CHANGES [1] IN FACILITIES/SERVICES — LEASING ALTERNATIVE 2A
Northern Cheyenne Reservation

	Changes Due to Leasing Alternative 2A Only			Cumulative Impacts of Leasing Alternative 2A and the Low Baseline Alternative — 2005
	1995	2000	2005	
No. Housing Units That Can Accommodate Families:				
Native American Families	16	93	103	373
Non-Native American Families	5	33	41	41
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	0	2	2	2
Non-Native American Singles	6	25	16	16
Water Requirements:				
Water Flows (gpd)*	12100	70300	77400	279800
Water Storage (gpd)*	20100	117100	129100	466300
Sewage Treatment Requirements (gpd):*	8000	46900	51600	186500
Schools:				
No. Students in Grades 1-8[2]	10	66	77	237
No. Students in Grades 9-12[2]	2	15	17	53
No. Teachers in Grades 1-8[3]	.5	3.5	4.5	13.5
No. Teachers in Grades 9-12[3]	0	1.0	1.0	3.0
Sq. Ft. School Space, Grades 1-8[3]	1000	6600	7700	23700
Sq. Ft. School Space, Grades 9-12[3]	300	1900	2100	6600
Health Care:				
No. of Physicians				
Native American	0	.5	1.0	2.5
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	0	.5	1.0
Non-Native American	0	0	0	0
No. Nurses				
Native American	0	1.0	1.5	5.0
Hospital Beds				
Native American[4]	.5	2.0	2.0	7.5
Non-Native American	0	.5	.5	.5
Ambulance Service				
Personnel	0	0	5.0	5.0
Vehicles	0	0	1.0	1.0
Law Enforcement:				
No. of Officers	.5	2.0	2.5	7.5
No. of Vehicles	0	1	1	3.0
Sq. Ft. Office Space	50	200	250	750
Fire Protection:				
No. of Volunteer Officers	0	0	0	0
No. of Vehicles	0	0	0	0
Sq. Ft. Office/Storage Space	0	0	0	0
Social Services:				
No. of Social Workers				
Native American	0	1.0	1.5	4.5
Non-Native American	0	0	0	0
Population Change:				
Native American	80	469	516	1865
Non-Native American	18	129	155	155

* gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for columns 1, 2 and 3 are measured against Low Baseline. The fourth column includes Leasing Alternative 2A and Low Baseline measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers are calculated.

Source: BLM, 1988

TABLE 4A-17
CHANGES[1] IN FACILITIES/SERVICES — LEASING ALTERNATIVE 2B
Northern Cheyenne Reservation

	Changes Due to Leasing Alternative 2B Only		Cumulative Impacts of Leasing Alternative 2B and the Low Baseline Alternative — 2005
	2000	2005	
No. Housing Units That Can Accommodate Families:			
Native American Families	80	89	359
Non-Native American Families	30	36	36
No. Housing Units That Can Accommodate Single Workers:			
Native American Singles	1	1	1
Non-Native American Singles	19	11	11
Water Requirements:			
Water Flows (gpd)*	60000	66600	269000
Water Storage (gpd)*	100000	111100	448300
Sewage Treatment Requirements (gpd):*	40000	44400	179300
Schools:			
No. Students in Grades 1-8[2]	55	66	226
No. Students in Grades 9-12[2]	13	15	51
No. Teachers in Grades 1-8[3]	3.0	3.5	12.5
No. Teachers in Grades 9-12[3]	.5	1.0	3.0
Sq. Ft. School Space, Grades 1-8[3]	5500	6600	22600
Sq. Ft. School Space, Grades 9-12[3]	1600	1900	6400
Health Care:			
No. of Physicians			
Native American	.5	1.0	2.5
Non-Native American	0	0	0
No. Dentists			
Native American	0	.5	1.0
Non-Native American	0	0	0
No. Nurses			
Native American	1.0	1.0	4.5
Hospital Beds			
Native American[4]	1.5	2.0	7.5
Non-Native American	.5	.5	.5
Ambulance Service			
Personnel	0	5	5
Vehicles	0	1	1.0
Law Enforcement:			
No. of Officers	2.0	2.0	7.0
No. of Vehicles	1	1	3.0
Sq. Ft. Office Space	200	200	700
Fire Protection:			
No. of Volunteer Officers	0	0	0
No. of Vehicles	0	0	0
Sq. Ft. Office/Storage Space	0	0	0
Social Services:			
No. of Social Workers			
Native American	1.0	1.5	4.5
Non-Native American	0	0	0
Population Change:			
Native American	400	444	1793
Non-Native American	109	134	134

* gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for columns 1 and 2 are measured against Low Baseline. The third column includes Leasing Alternative 2B and the Low Baseline measured against 1987. A column for 1995 is not included because Leasing Alternative 2B development does not begin until 1996.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

TABLE 4A-18
CHANGES[1] IN FACILITIES/SERVICES — LEASING ALTERNATIVE 4
Northern Cheyenne Reservation

	Changes Due to Leasing Alternative 4 Only			Cumulative Impacts of Leasing Alternative 4 and the Low Baseline Alternative — 2005
	1995	2000	2005	
No. Housing Units That Can Accommodate Families:				
Native American Families	16	100	126	396
Non-Native American Families	5	33	41	41
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	0	3	4	4
Non-Native American Singles	6	32	26	26
Water Requirements:				
Water Flows (gpd)*	12100	75700	95300	297600
Water Storage (gpd)*	20100	126100	158800	496000
Sewage Treatment Requirements (gpd):*	8000	50500	63500	198400
Schools:				
No. Students in Grades 1-8[2]	10	69	91	251
No. Students in Grades 9-12[2]	2	16	21	57
No. Teachers in Grades 1-8[3]	.5	4.0	5.0	14.0
No. Teachers in Grades 9-12[3]	0	1.0	1.0	3.0
Sq. Ft. School Space, Grades 1-8[3]	100	6900	9100	25100
Sq. Ft. School Space, Grades 9-12[3]	300	2000	2600	7100
Health Care:				
No. of Physicians				
Native American	0	.5	1.0	2.5
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	.5	.5	1.0
Non-Native American	0	0	0	0
No. Nurses				
Native American	0	1.5	1.5	5.0
Hospital Beds				
Native American[4]	.5	2.0	2.5	8.0
Non-Native American	0	.5	.5	.5
Ambulance Service				
Personnel	0	0	5	5
Vehicles	0	0	1.0	1.0
Law Enforcement:				
No. of Officers	.5	2.5	3.0	8.0
No. of Vehicles	0	1	1	3.0
Sq. Ft. Office Space	50	250	300	800
Fire Protection:				
No. of Volunteer Officers	0	0	0	0
No. of Vehicles	0	0	0	0
Sq. Ft. Office/Storage Space	0	0	0	0
Social Services:				
No. of Social Workers				
Native American	0	1.0	1.5	4.5
Non-Native American	0	0	0	0
Population Change:				
Native American	80	504	636	1985
Non-Native American	18	132	166	166

* gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for columns 1, 2 and 3 are measured against Low Baseline. The fourth column includes Leasing Alternative 4 and the Low Baseline measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

2005. Native American and non-Native American services are discussed separately in cases where service provision does not apply equally to both groups. The forecasted demand placed on Reservation services by all three leasing alternatives would require additional funding if those services are to be provided. Table 4A-19 shows the needed capital expenditures and annual operating costs for each of the leasing alternatives in the year 2005 on the Northern Cheyenne Reservation. The service-demand values presented in this section are calculated using regional service-demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. Those are both described in Technical Report 3.

The section below briefly discusses each of the various services. The service-demand estimates and associated cost estimates in the above tables are based on changes over and above the Low Baseline Alternative and represent providing adequate service to that increment of population change resulting from each of the three leasing alternatives. A high level of concern was expressed at the Northern Cheyenne Scoping Meeting (BLM, 1987), in letters received during the scoping process and at individual interviews on the Reservation, regarding the possible impacts to Reservation service provision from regional coal development.

Construction of mines in Leasing Alternatives 2A and 4 is projected to begin in 1994 and end in 2000 or 2001. Full production at all mines, and consequently maximum impact to services and infrastructure, would begin in 2004 and continue for approximately 40 years. Construction for Leasing Alternative 2B projects would occur from 1996 through 2000 with full production starting in 2004.

Housing

Demand for housing would be high under the three leasing alternatives. There is currently a severe shortage of units for both rent and purchase on the Reservation (Feeney, et al., 1986; M. Bearcomesout, 1987). Construction by the Northern Cheyenne Housing Authority to eliminate the housing shortage is limited by lack of funding. It is unlikely the 1988 and Low Baseline Alternative combined deficiencies of 690 housing units would be met by 2005, much less the provision of 144, 125, and 167 additional units needed as a result of Leasing Alternative 2A, 2B and 4, respectively. Newly formed Native American families and Native Americans returning to the Reservation would probably live with friends or relatives and thereby exacerbate the current crowded conditions of existing housing units.

It is assumed that the limited number of housing units available on the Reservation, coupled with difficulty in obtaining housing sites, would restrict the number of non-Native American families settling on the Reservation. The demand for family housing on the Reservation would exceed supply under Leasing Alternatives 2A and 4, but not under Leasing Alternative 2B. As development associated with the three leasing alternatives begins, it is assumed 21 housing units that could accommodate families would become available to non-Native Americans on the Reservation. This number would grow to 41 by the year 2005. (See Technical Report 4 for a description of how housing availability was calculated.) The acquisition of these 41 housing units by 41 non-Native American families (a supply of housing that would be exhausted under Alternatives 2A and 4) would mean less housing available to current and future Native American Reservation residents. Ashland Village and Lame Deer are the two communities on the Reservation most likely to receive additional housing pressure by non-Native Americans.

Spaces for recreation vehicles and trailers would be available in and near Lame Deer to accommodate an estimated 20 single workers in 1995; this number would increase to accommodate 40 workers by 2005. The demand for lease/rental units created by non-Native American single workers under Leasing Alternatives 2A and 2B could be met by the forecasted available housing. It would not be met under Leasing Alternative 4.

Due to the housing shortage on the Reservation, those units which are available to both Native Americans and non-Native Americans would be in great demand as a result of population growth associated with the three leasing alternatives. This demand would put upward pressure on rents and prices for these on-Reservation units. Off-Reservation rents and prices are likely to moderate as housing supply increases due to increased capital available for construction. An increase in private housing supply on the Reservation is not likely to occur due to a lack of development capital and suitable homesites. Because prices for private housing on the Reservation are likely to remain high and in short supply for a longer time than off-Reservation, there would be an incentive for people competing for housing in the region to settle off the Reservation.

Concern about housing was frequently mentioned by Reservation residents during the Northern Cheyenne Scoping Meeting (BLM, 1987) and in individual interviews. Impacts to Reservation housing are expected to be severe under each leasing alternative because of the high level of demand which would intensify current (1987) and expected Low Baseline inadequate conditions including crowded housing, and the high levels of expenditures that would be required to meet leasing alternative demands. Impacts to housing would be greatest under Leasing Alternative 4, and lowest under Leasing Alternative 2B. The cumulative impact to housing from any of the leasing alternatives, when combined with the Low Baseline, would be very severe.

Water and Sewer

Water and sewer systems on the Northern Cheyenne Reservation are expected to be affected by all three leasing alternatives. Even if no additional housing were developed, it is probable that the doubling or tripling of families in existing housing would cause existing water and sewer systems, already expected to be stressed by the Low Base-

TABLE 4A-19
ADDITIONAL SERVICE EXPENDITURES NEEDED[1]
Northern Cheyenne Reservation
2005

	Low Baseline Alternative	Leasing Alt. 2A	Leasing Alt. 2B	Leasing Alt. 4
Housing				
Capital Costs	$14,040,000	$5,460,000	$4,680,000	$6,760,000
Operating Costs	126,000	49,000	42,000	61,000
Water				
Capital Costs	2,631,000	1,006,000	866,000	1,240,000
Operating Costs	36,000	14,000	12,000	17,000
Sewer				
Capital Costs	3,170,000	1,213,000	1,043,000	1,495,000
Operating Costs	23,000	9,000	8,000	11,000
Solid Waste				
Capital Costs	28,000	4,000	4,000	4,000
Operating Costs	21,000	7,000	7,000	7,000
Education				
Capital Costs	1,969,000	943,000	814,000	1,127,000
Operating Costs	1,034,000	496,000	427,000	591,000
Health Care				
Capital Costs	563,000	256,000	256,000	307,000
Operating Costs	877,000	344,000	296,000	422,000
Law Enforcement				
Capital Costs	93,000	46,000	41,000	52,000
Operating Costs	262,000	130,000	112,000	156,000
Fire Protection				
Capital Costs	0	0	0	0
Operating Costs	16,000	8,000	7,000	10,000
Roads				
Capital Costs		No reliable information is available.		
Operating Costs				
Recreation				
Capital Costs	19,000	19,000	19,000	19,000
Operating Costs	44,000	22,000	22,000	22,000
Social Services				
Capital Costs	33,000	11,000	17,000	17,000
Operating Costs	108,000	36,000	54,000	54,000

[1] Leasing Alternative figures represent increases over the Low Baseline Alternative. Low Baseline Alternative figures represent increases over 1987. Cumulative impacts can be calculated by adding the Low Baseline Alternative numbers to the appropriate Leasing Alternative numbers.

NOTE: All expenditure figures are in 1985 dollars. Actual expenditures required, in 2005 dollars, would likely be considerably higher depending on the inflation rate between 1985 and 2005. See Technical Reports 3 and 4 for information on how these expenditures were calculated.

Source: BLM, 1988

line populations, to be further stressed to meet the needs associated with each of the three leasing alternatives. It is assumed that housing acquired by non-Native Americans would either be served by existing systems or by individual wells and septic tanks.

The impacts on water and sewer systems from the leasing alternatives depend on whether additional housing is built. If HUD funds are obtained for housing, IHS funding would also be made available for matching sewer and water systems. If additional housing is not built, moderate impacts would be expected due to the Reservation population increases estimated for each of the leasing alternatives. Impacts are expected to be greatest for Leasing Alternative 4, and lowest for Leasing Alternative 2B. The cumulative impacts of any of the leasing alternatives, when combined with the Low Baseline, would be severe if water and sewer systems are not updated.

Solid Waste

Solid waste is held at canister sites on the Reservation prior to being shipped to off-Reservation dumps. The population increase associated with each of the three leasing alternatives would require the addition of two canisters for Leasing Alternatives 2A and 4, and one canister for Leasing Alternative 2B on the Reservation for interim solid waste disposal. The new canisters would probably need to be located at the Lame Deer and/or Ashland Village sites because population growth would be greatest in these two areas. The current (1986-1987) problems with canister sites, (i.e., equipment, maintenance, personnel, high waste disposal costs, and fires) would likely continue. Impacts on solid waste disposal on the Northern Cheyenne Reservation under the three leasing alternatives would be mild if Low Baseline Alternative needs were met. However, impacts would be severe under each of the three leasing alternatives if the solid waste disposal sites at Birney Village and Lame Deer were not constructed (or reconstructed), and if additional canisters/needs identified under the Low Baseline Alternative were not provided.

Education

There would be an increase of 210, 181, and 249 students in Grades 1 through 12 on the Reservation in the year 2005, under Leasing Alternatives 2A, 2B, and 4, respectively. Reservation students currently have a variety of school options available to them; see Chapter 3, Section 3.6.N, for a detailed discussion of these options. Tables 4A-16, 4A-17, and 4A-18 show increased demands for teachers and school space for Lame Deer Elementary and Busby Tribal School. By 2005, there would be a demand for an additional 5.5, 4.5, and 6.0 teachers and 9,800, 8,500, and 11,700 square feet of school space under Leasing Alternatives 2A, 2B, and 4, respectively. These figures assume Reservation students would continue to attend Lame Deer Elementary and Busby Tribal schools in their 1987 proportions: 55 percent for Grades 1 through 8 and 25 percent for Grades 9 through 12. (See Technical Report 3 for a discussion of how the numbers of Reservation students were calculated.)

By 2005, Reservation students attending the various off-Reservation schools would generate a demand for 6.5, 5.5, and 7.5 teachers, and 12,800, 11,000, and 15,300 square feet of school space under Leasing Alternatives 2A, 2B, and 4, respectively. Reservation students attending off-Reservation schools may be affected by project development if those schools become crowded due to off-Reservation population increases. Coal development may act as a catalyst for the development of a high school in the Ashland area, offering another education option for Reservation students. The current problems at all schools, particularly at the high school level, of students frequently switching between schools and high dropout rates would continue. Northern Cheyenne students would most likely continue to attend off-Reservation schools, such as Colstrip, that offer little involvement with Northern Cheyenne culture or language, long daily commutes over poor roads, and a lack of extracurricular involvement by students and parents because of the long distance between school and home.

Concern about Reservation schools and education of Reservation school children was frequently expressed during the Northern Cheyenne Scoping Meeting (BLM, 1987) and individual interviews on the Reservation. Although many Reservation residents feel that the Colstrip schools offer an excellent educational opportunity for their children, there is concern that Reservation schools deteriorate as Reservation children transfer to off-Reservation schools. Reservation schools are highly dependent upon enrollment-based funding. In addition there are concerns that the social and cultural life of the Tribe will be affected by the increasing number of children attending off-Reservation schools (See Chapter 4A, Section 4A.2.N). The level of these concerns would probably accelerate under each of the three leasing alternatives. Impacts to education are expected to be moderate under all three leasing alternatives because of the increases in students in Reservation schools and the large number of students attending off-Reservation schools. However, even though impacts to Reservation schools would be similar under all three leasing alternatives, regional educational changes, which could indirectly affect Reservation students and schools, would be greatest under Leasing Alternative 4. The cumulative impact of any of the three leasing alternatives, when combined with the Low Baseline Alternative, would be severe.

Health Care

Health care on the Northern Cheyenne Reservation would be affected by each of the three leasing alternatives. See Tables 4A-16, 4A-17, and 4A-18 for demands for doctors, dentists, and nurses under the three leasing alternatives. Additional demands could also be placed on the Lame Deer Clinic by Native Americans moving into areas adjacent to the Reservation, such as St. Labre and Ashland.

No major medical care is currently available on the Reservation. The Crow Agency Hospital, which serves the Northern Cheyenne Reservation, would experience increased demands for outpatient and major medical services due to the population growth on the Northern

eyenne Reservation created by each of the three leasing ernatives. That hospital is on the Crow Reservation in town of Crow Agency. Additional Contract Health Ser- e (CHS) funding from the IHS would have to be made ailable so Native Americans could receive major medical e off-Reservation; in 1987, there was a large deficit in s type of funding. By 2005, an additional 2 hospital beds uld be needed to meet the demand from Northern eyenne Reservation Native Americans under Leasing ternatives 2A and 2B; 2.5 additional hospital beds would needed under Leasing Alternative 4. Under each leasing ernative, half of the beds would be at the Crow Agency spital and half at regional hospitals.

mand for alcoholism and drug abuse treatment services uld increase due to Reservation and Regional popula- n growth. The rise in alcoholism and drug abuse would only generate a higher demand for addiction treat- nt, but would also be associated with increases in ohol-related diseases, accidents, suicides, and other vio- t behaviors, all of which would increase health care vice demands.

medical services are currently available to non-Native nericans on the Reservation except for urgent care and bulance service. That situation would likely continue cause the demand generated by the non-Native Ameri- n population, even with the increases forecasted under asing Alternatives 2A, 2B, and 4, combined with the Low seline Alternative, would not be sufficient to support a l-time doctor or dentist.

der each leasing alternative, increases in Reservation pulation would necessitate the addition of an ambulance d crew. If the pre-October 1987 crew levels have not been tored for existing ambulances (see Chapter 3, Section .N), this would also have to be done to maintain ade- ate coverage. In addition, the ambulance service may cide to station ambulances in some outlying communi- s to decrease response time, rather than housing them all Lame Deer. In the year 2005, the number of ambulance ls in response to traffic accidents from Leasing Alterna- es 2A, 2B, and 4, is forecasted to increase annually by 15, and 18 calls, respectively. These increases are based on servation population growth and are in addition to the mand from the Low Baseline Alternative. Increases in ffic across the Reservation due to regional population owth could also increase the demand on Reservation bulances; this demand is not quantified.

mand for urgent medical services, which are available to tive Americans and non-Native Americans from Lame er Clinic would increase with population growth and gher Reservation road usage. The number of people ated by the Lame Deer Clinic in response to motor vehi- accidents (estimated to be 100 in fiscal year 1986, the st recent data available) would increase annually by proximately 10 (over the Low Baseline Alternative) for year 2005 for Leasing Alternative 2A or 2B, and by 13 Leasing Alternative 4 due to Reservation population crease alone. If traffic increases cause more accidents volving Native Americans, the need for CHS funding would increase so that treatment for serious injuries could be provided off-Reservation.

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned during the Northern Cheyenne scoping process and in individual interviews on the Reservation. Impacts to the health care system are expected to be moderate under each of the leasing alternatives because of the importance of these services and the costs associated with providing them. Impacts to health care would be greatest under Leasing Alternative 4 and lowest under Leasing Alternative 2B. The cumulative impacts of any of the three leasing alternatives, when combined with the Low Baseline Alternative, would be severe.

Law Enforcement

There would be a need for two to three additional police officers and one police vehicle under each of the three leasing alternatives by 2005. This need would be created by the increases in Reservation population. However, the demand figures may underestimate the real situation because, in addition to the demand created directly by Reservation population growth, the police may need to respond to more traffic accidents due to increased regional traffic passing through the Reservation; more crime associated with increases in alcohol and drug abuse; more trespassing due to regional population growth; and more disputes involving Native Americans and non-Native Americans, both on the Reservation and at nearby off-Reservation locations. Increased coverage for outlying areas, such as Birney Village and Ashland Village, would have to be provided. It should be noted that BIA police respond first to all motor vehicle accidents; the Montana Highway Patrol is called in only in fatal accidents or when a non-Native American is at fault. The BIA police are responsible for apprehending and holding non-Native Americans as well as Native American offenders. The adoption of the new legal code on the Northern Cheyenne Reservation may also increase future police work.

The already backlogged Tribal Court system (see Chapter 3, Section 3.6.N) would see an increase in cases, particularly those involving credit transactions, business transactions, and alcohol and drug-related offenses, creating additional impacts the Tribe is poorly equipped to deal with. The problems associated with multiple jurisdictions (see Chapter 3, Section 3.6.N) would further complicate the situation, creating difficulty in the Court's ability to process cases. Problems with law enforcement and multiple jurisdictions are of particular concern to Reservation members and were mentioned frequently at the Northern Cheyenne Scoping Meeting and during individual interviews on the Reservation.

The impact to the Reservation police and courts from the leasing alternatives is expected to be moderate due to increases in demand for these services and the costs of providing the services. Impacts would be greatest under Leasing Alternative 4; smallest under Leasing Alternative 2B. The cumulative impacts of any of the three leasing

alternatives, when combined with the Low Baseline Alternative, would be severe.

Fire Protection

The population increases under each of the three leasing alternatives are not large enough to create the need for an additional fire vehicle and crew. However, the fire protection service would remain very inadequate if an organized structural fire protection service was not developed under the Low Baseline Alternative or under these leasing alternatives. When the structural service is organized, it may be determined that an additional truck would be necessary.

Increases in the recreational use of the Reservation by Native and non-Native Americans and increased use of canister dump sites (where numerous fires have occurred (Feeney, et al., 1986)) could cause more range and forest fires. If a significant increase occurred in the number of fires, the BIA Forestry Program firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these impacts is unknown.

Roads

Reservation roads are expected to be affected under each of the three leasing alternatives. Tables 4A-20, 4A-21, and 4A-22 show the increased use of Reservation roads due under Leasing Alternatives 2A, 2B, and 4, respectively. Traffic on U.S. 212, the major east-west road across the Northern Cheyenne Reservation, would increase 12 to 17 percent over the Low Baseline Alternative under either Leasing Alternative 2A or 2B. This figure would increase to 33 to 37 percent with Leasing Alternative 4. Traffic on the rural Kirby Road would increase nearly 50 percent over the Low Baseline Alternative under Leasing Alternative 4. These estimates are based on increases in mine construction and operation commuter traffic. There would be additional traffic from more indirect employees, and from Reservation and regional population travel for shopping, attending school, recreation, etc. Commercial truck traffic due to the coal mines and expanded regional business activity would also rise. However, these types of increases are very difficult to quantify.

Traffic increases on most roads are forecasted to be higher for the year 2000 than 2005; this occurs because some con-

TABLE 4A-20
INCREASES IN ROAD USE[1] — LEASING ALTERNATIVE 2A
Northern Cheyenne Reservation

	Increases Due to Leasing Alternative 2A Only[2]						Cumulative Impacts of Leasing Alternative 2A and the Low Baseline Alternative[3] — 2005	
	1995		2000		2005			
	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%
West Border to Lame Deer (U.S. 212)	47	3	249	17	212	14	212	14
Lame Deer to East Border (U.S. 212)	57	4	298	19	263	17	263	17
Lame Deer to N. Border (MT 39)	5	0	27	3	23	2	23	2
Lame Deer to Birney Village	0	0	0	0	0	0	0	0
Kirby Road	13	7	49	25	42	21	42	21
Ashland Village to Birney Village	4	2	18	9	14	7	14	7

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activities) is not included.
[2] Increases measured against the Low Baseline Alternative.
[3] Increases measured against current figures. Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily average figure.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

TABLE 4A-21
INCREASES IN ROAD USE[1] — LEASING ALTERNATIVE 2B
Northern Cheyenne Reservation

	Increases Due to Leasing Alternative 2B Only[2]				Cumulative Impacts of Leasing Alternative 2B and the Low Baseline Alternative[3] — 2005	
	2000		2005			
	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%
West Border to Lame Deer (U.S. 212)	188	13	181	12	181	12
Lame Deer to East Border (U.S. 212)	226	14	212	13	212	13
Lame Deer to N. Border (MT 39)	21	2	17	2	17	2
Lame Deer to Birney Village	0	0	0	0	0	0
Kirby Road	33	17	30	15	30	15
Ashland Village to Birney Village	12	6	11	6	11	6

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to mine and expanded regional business activities) is not included.
[2] Increases measured against the Low Baseline Alternative.
[3] Increases measured against current figures. Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily average figure.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

TABLE 4A-22
INCREASES IN ROAD USE[1] — LEASING ALTERNATIVE 4
Northern Cheyenne Reservation

	Increases Due to Leasing Alternative 4 Only[2]						Cumulative Impacts of Leasing Alternative 4 and the Low Baseline Alternative[3] — 2005	
	1995		2000		2005			
	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%	No. of Daily Trips	%
West Border to Lame Deer (U.S. 212)	47	3	515	35	497	33	497	33
Lame Deer to East Border (U.S. 212)	57	4	612	38	582	37	582	37
Lame Deer to N. Border (MT 39)	5	0	53	5	46	4	46	4
Lame Deer to Birney Village	0	0	0	0	0	0	0	0
Kirby Road	13	7	105	54	95	48	95	48
Ashland Village to Birney Village	4	2	37	19	32	16	32	16

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activity) is not included.
[2] Increases measured against the Low Baseline Alternative.
[3] Increases measured against current figures. Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily average figure.

Source: Feeney, et al., 1986; Mt. Department of Highways, 1988; BLM, 1988

struction related to the leasing alternatives (Table 4A-1) would still be taking place during 2000, and relatively short-term construction workers are generally more willing to travel greater distances to work. The Reservation's primary roads (U.S. 212 and MT 39) generally have low sufficiency ratings based on a combination of road conditions, capacity, safety, and other rating characteristics (Feeney, et al., 1986). This is of particular concern because of the large number of loaded school buses that cross the Northern Cheyenne Reservation each day. Increased traffic in the Ashland Village and Birney Village areas, and increased congestion and accidents in Lame Deer at the U.S. 212/MT 39 intersection, also concern many residents. Birney Village residents indicate when U.S. 212 between Ashland Village and Lame Deer is blocked or icy, vehicles detour through Birney Village. Some Reservation roads are currently in poor condition and are scheduled for resurfacing and/or reconstructing in the mid-1990s, subject to future Montana Highway Department priorities and funding availability (Sioux, 1987).

Concerns regarding Reservation roads, particularly increases in truck traffic, were expressed at the Northern Cheyenne Scoping Meeting and frequently during individual interviews. The impact to the Reservation road system is expected to be moderate under Leasing Alternatives 2A and 2B, and moderate to severe under Leasing Alternative 4 due to traffic increases. These traffic increases would cause higher maintenance costs and more accidents. Use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents may also rise.

Recreation

There would be some increased usage of recreational facilities on the Reservation under each of the three leasing alternatives. This would occur because of Native American population growth on the Reservation and increased usage of the Reservation by people living off-Reservation. There could also be increases in poaching, littering, trespassing, and conflicts over recreation resources and facility use (Feeney, et al., 1986). One to 1.5 compliance officers, to police recreation areas, would be needed under the three leasing alternatives, in addition to the 2 compliance officers required under the Low Baseline Alternative. These impacts are expected to be mild.

Social Services

The inmigration of Native Americans projected under each of the three leasing alternatives would place substantial pressure on the already (1987) inadequately staffed Reservation social service system, which provides services such as child welfare, general assistance, etc. To meet the increased population needs associated with each of the three leasing alternatives, 1.5 additional social workers would be required over Low Baseline Alternative levels. If returning Native Americans are unable to find employment and/or if the increases in population both on and off the Reservation result in more stress on families, creating more poverty and abuse situations, the demand on social services could increase at an even higher rate than expected. Impacts to social services were frequently mentioned concerns at the Northern Cheyenne Scoping Meeting and in individual interviews on the Reservation. Impacts to social services from the leasing alternatives are expected to be moderate. These impacts would be greatest from Leasing Alternative 4 and lowest from Leasing Alternative 2B.

Other Services

Increases in on- and off-Reservation population as a result of each of the three leasing alternatives would lead to increasing pressures on a variety of other services such as care for the elderly and Dull Knife Memorial College in Lame Deer. Most Reservation services are currently experiencing funding shortages so it may be very difficult to expand services for a growing population. For example, Dull Knife Memorial College may see an increase in non-Native American students from off-Reservation communities such as Colstrip and Ashland under all leasing alternatives; the college currently receives no funding from the state or federal government for these students. In recent years, 10 to 20 percent of the students who attend Dull Knife have been non-Native Americans, predominately from Colstrip and Ashland. As these communities grow, it is expected the number of students from these areas would increase. Any increase in non-Native American students would put financial stress on the college. Mild impacts to Dull Knife Memorial College are expected from each of the three leasing alternatives.

4A.2.7N Social Organization

Community social organization refers to the structures and processes that organize how people in a community relate to one another. The *Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity, outside ties, distribution of resources/power, coordination and cooperation among people in the community, and patterns of personal interaction. These characteristics are used to discuss impacts to social organization. See Technical Report 6 for a discussion of how this section was developed.

Under each of the three leasing alternatives, severe impacts to social organization would occur on the Northern Cheyenne Reservation because of the following factors: (1) migration of non-Native Americans onto the Reservation (long-term levels would be approximately 24 to 29 percent above the Low Baseline 2005 level of 565), (2) return-migration (migration back onto the Reservation by former residents) of Native Americans, including potential employees and their families, in search of the benefits of development, (3) coal-related population increases in areas directly adjacent to the Reservation (the population of the Ashland/St. Labre area can be used as an indicator), (4) regional population growth in areas, such as Broadus,

Miles City, Sheridan, Colstrip, Forsyth, Hardin, and Billings, that are not directly adjacent to the Reservation but, nevertheless, would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for such activities as shopping, recreation or attending school, (5) Native Americans, both inmigrating and current residents, would obtain direct and indirect employment in the coal mine industry resulting in annual increases in payroll to Reservation Native Americans, and (6) changes in social well-being (See Chapter 4A, Section 4A.2.8N). Table 4A-23 shows, by leasing alternative, the relative changes in each of these impact factors over the Low Baseline Alternative in the year 2005. Changes to social organization would be greatest under Leasing Alternative 4, and lowest under Leasing Alternative 2B. The cumulative impact of any of the three leasing alternatives, combined with the Low Baseline Alternative, would be very severe.

Greater contact with non-Native Americans, both on- and off-Reservation, and the return-migration of Native Americans who have lived off the Reservation, would increase the diversity of ideas, values and behaviors on the Reservation. More interactions with off-Reservation entities by individuals who work, attend school, recreate, shop, etc., off the Reservation would also occur. These interactions could lead to increased assimilation of the Northern Cheyenne into the White culture.

There may be more interaction between the Tribal government and county and state government as the Tribal government attempts to provide for increasing service demands. There may also be an increase in feelings of a local lack or loss of control because the decisions regarding coal development are made off-Reservation. This would be coupled with a high rate of inmigration that would stress the Tribal government's ability to operate efficiently.

Conflict among Native American social groups on the Reservation would probably increase. Much of the current conflict among social groups occurs because of the perceived inequality in access to resources, such as jobs and income. These conflicts would likely increase because the benefits of relatively high paying employment would be obtained by some individuals, while the negative effects of coal development would be felt by most Reservation residents. There may be a decrease in the ability of the residents to coordinate and cooperate because of conflict over coal development and the uneven distribution of benefits, combined with the stress put on service provision by the rapid on- and off-Reservation population increase. The rising demand for services would necessitate increasing cooperation and coordination to manage change.

Some changes in personal interaction may occur with increased potential for conflicts with non-Native Americans, both on the Reservation and in adjacent communities. For example, existing problems between Native Amer-

TABLE 4A-23
CHANGES [1] IN IMPACT FACTORS — SOCIAL ORGANIZATION
Northern Cheyenne Reservation
2005

Factors	Low Baseline Alternative	Leasing Alternative 2A	Leasing Alternative 2B	Leasing Alternative 4
Inmigration of Non-Native Americans	0	155	134	166
Return Migration of Native Americans [2]	0	200-250	200-250	250-300
Off-Reservation Population				
Ashland/St. Labre (1987 population = 513)	0	1,369	642	2,361
Percent change	0	267%	125%	460%
Colstrip (1987 population = 1,581)	310	48	35	91
Percent change	20%	3%	2%	5%
Change in direct and indirect Native American Employment	0	64	49	107
Total annual associated payroll for Native Americans (Million dollars)	0	1.4	1.1	2.4
Level of impact to Reservation roads	Mild	Moderate	Moderate	Moderate to Severe
Level of impact to social well-being	Moderate to Severe	Severe	Severe	Severe

[1] Unless otherwise indicated, Low Baseline figures are for 2005 measured against 1987; Leasing Alternative figures are for 2005 measured against the Low Baseline.
[2] This return-migration would occur during project construction.

NOTE: Cumulative impacts can be obtained by adding leasing alternative and Low Baseline Alternative numbers together.

Source: BLM, 1987

icans and non-Native Americans in Ashland would probably be exacerbated. Rapid growth is expected in the Ashland area, and Ashland may have difficulty dealing with the growth because it is an unincorporated community without a history of coordinated response to development (BLM, 1984; Mountain West Research — North, 1982). The isolated community of Birney Village is particularly vulnerable to changes in social structure caused by increases in Reservation traffic and non-Native American presence on the Reservation. Increased contact could also result in more intermarriage which might affect the ability of the Northern Cheyenne to survive as culturally distinct people (NCPO, 1981).

Even with the changes described, it is expected that the Northern Cheyenne sense of Tribal identity would remain strong. However, increasing exposure to non-Native American ideas would cause cultural conflicts that result in problems for some individuals. The feeling that the Reservation is a homeland for the Northern Cheyenne could be somewhat compromised by increasing traffic on the Reservation and the rapid growth of Ashland, directly adjacent to the Reservation. Kinship ties would remain strong (NCPO, 1981), although patterns of sharing would continue to be modified as younger people become more used to the concept predominate in White society, that they should be mainly responsible for supporting their nuclear family (Feeney, et al., 1986). This could weaken the support traditionally provided by the extended family and create increased stress on nuclear families and individuals. The modification of sharing patterns could also result in less communal living, making the conveyance of Northern Cheyenne customs and language more difficult.

Under each of the leasing alternatives, coal development would create substantial benefits for the individual Native Americans who were able to obtain employment. Because of traditional sharing patterns, this income may benefit more people than just the families where employment occurs. An increase of 49 to 107 jobs (depending upon the alternative) is significant to a Tribe with an approximately 50 percent unemployment rate and a 1986 full-time employment level of 515. This employment could help the Northern Cheyenne maintain their cultural distinction by allowing them to live on the Reservation while securing employment elsewhere. However, the money earned at the mine would bring increased reliance on a cash economy rather than a barter economy, and increased exposure to other values which could indirectly decrease the incidence of communal living and sharing among families.

4A.2.8N Social Well-Being

Under the three leasing alternatives, changes would occur in social well-being due to changes in availability of services and facilities; changes in employment and business activity; stress caused by changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. Reservation facilities and services would be moderately to severely stressed due to on-Reservation and regional population growth. The demand for housing would force the doubling or tripling of families in existing housing. Increases in stress on individuals associated with changes in social structure, changes in cultural conditions, housing crowding, service/infrastructure shortfalls, and increased availability of illegal drugs in surrounding communities could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Social conflicts and the inability for some to obtain employment could lead to more crimes against people and property. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. In addition, there is also concern that alcohol and drug abuse affects the ability of Northern Cheyenne people to practice their traditional religion and of parents to teach their children the Cheyenne way.

An increase in social well-being would occur to those who were able to obtain employment or benefit from business expansion as a result of the increased income on the Reservation. Employment in the coal industry and related fields would provide income to those able to obtain jobs. However, there may be so many returning Northern Cheyenne who do not find work that the unemployment rate may be unchanged or rise, and may leave those inmigrants with less income than they had when they previously lived off the Reservation. Return-migrants unable to obtain employment may push up the rate of demand for welfare and other social services. Employment could also cause problems. For instance, the increased availability of money on the Reservation and the strong sharing tradition could increase the opportunity to use alcohol and drugs. It should be noted that the aforementioned housing crowding may not be entirely negative because extended families may live together, and as in the past, offer support and share household expenses.

Depression and suicide may rise among the elderly and youth due to rapid social change (NCPO, 1981). A high proportion of the Reservation is very young and at the age in which thrills and risks can be enticing. Social well-being in Ashland Village would be influenced by the rapid population growth in nearby Ashland. This may result in increased alcoholism and drug abuse and conflicts between Native and non-Native Americans. Changes in the highly traditional, isolated, quiet nature of Birney Village would distress residents and decrease their social well-being.

It is likely that, as a whole, Tribal members would feel less well off after coal development associated with the leasing alternatives. Many of the problems they see as most critical (alcohol and drug abuse, inadequate community services, unemployment and poverty, crime, lack of communication among people, family problems (Feeney, et al., 1986, BLM, 1987)) may be exacerbated by increased coal development. Perhaps of greater importance is the likelihood that those Northern Cheyenne who would not be able to take advantage of benefits associated with coal development would feel further deprived of economic equality. This deprivation might be relative, but it would be very real perception to the people who experienced it. The presence of individuals and families on the Reservation employed in the coal

mine industry and the visibility of regional inmigrants to Colstrip, Ashland, Sheridan and other communities, coupled with the improvement in such services as schools, shopping and recreation facilities in these off-Reservation communities, could increase such feelings of deprivation among those who do not share the benefits.

Changes in social well-being associated with the three leasing alternatives are expected to be severe. Impacts would be greatest under Leasing Alternative 4 and lowest under Leasing Alternative 2B. The cumulative effect of any of the leasing alternatives, combined with the Low Baseline Alternative, would produce very severe changes in social well-being. See Technical Report 6 for a discussion of how this section was developed. See Chapter 4A, Section 4A.1.9N for related information on impacts to culture under the three leasing alternatives.

4A.2.9N Cultural Conditions

Severe impacts would occur to Northern Cheyenne cultural conditions from each of the three leasing alternatives as measured against the Low Baseline Alternative. The specific impacts would be the same as those described for the three leasing alternatives over the High Baseline Alternative (see Section 4.2.9N).

4A.2.1C Employment

The development of each of the three leasing alternatives would employ some residents of the Crow Reservation. The impact of this employment on the Reservation economy would not be significant from any of the leasing alternatives. Tables 4A-24 and 4A-25 show direct and indirect employment changes for Leasing Alternatives 2A, 2B, and 4. Employment on the Crow Reservation from Leasing Alternative 2A is projected at 4 direct operations workers and 10 secondary workers in 2005. Of these workers, three secondary workers and two operations workers are projected to be nonlocal, non-Native American workers, while all other workers are projected to be local Native Americans. Employment would begin in 1995 with two nonlocal construction workers residing on the Crow Reservation. The change in on-Reservation employment in the year 2005 under Leasing Alternative 2A represents a 1 percent change above the Low Baseline FTE level of 752 on the Reservation.

4A.2.2C Population

The development of the three leasing alternatives would have little impact on population on the Crow Reservation. Population growth due to development of projects associated with Leasing Alternative 4 would increase the 2005 Reservation population by 35 people over the projected Low Baseline total of 9,320. This is a less than 1 percent change in total population. Therefore, population on the Crow Reservation is not expected to be significantly affected by any of the leasing alternatives due to the forecasted lack of return-migration and the small number of leasing alternative project employees settling on the Crow Reservation.

Hardin and Sheridan, nearby off-Reservation communities, are expected to see population growth from development of all three leasing alternatives. These increases are not expected to result in significant economic impacts on the Crow Reservation, but they are expected to affect some services on the Reservation and Crow social organization and social well being. For a discussion of these effects, see Sections 4A.2.6C, 4A.2.7C, and 4A.2.8C. Table 4A-26 shows the expected population changes to Hardin and Sheridan under each leasing alternative.

TABLE 4A-24
CHANGES IN DIRECT EMPLOYMENT[1] — EMPLOYEES RESIDING ON RESERVATION
Crow Reservation

Year	Construction		Operation		Total	
	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American
LEASING ALTERNATIVE 2A						
1990	0	0	0	0	0	0
1995	0	2	0	0	0	2
2000	0	2	2	2	2	4
2005	0	0	2	2	2	2
LEASING ALTERNATIVE 2B						
1990	0	0	0	0	0	0
1995	0	0	0	0	0	0
2000	0	2	1	1	1	3
2005	0	0	2	2	2	2
LEASING ALTERNATIVE 4						
1990	0	0	0	0	0	0
1995	0	2	0	0	0	2
2000	2	5	2	2	4	7
2005	0	0	4	5	4	5

[1] Changes measured against Low Baseline Alternative. Employment of Reservation residents, jobs would occur off-Reservation at mine sites.

Source: BLM, 1988

TABLE 4A-25
EMPLOYMENT OF RESERVATION RESIDENTS[1]
Crow Reservation

Year	Changes Over Low Baseline						Total [2] Employment	Low Baseline Total
	Indirect		Direct		Totals			
	Native American	Non-Native American	Native American	Non-Native American	Native American	Non-Native American		
				LEASING ALTERNATIVE 2A				
1990	0	0	0	0	0	0	752	752
1995	0	0	0	2	0	2	754	752
2000	4	2	2	4	6	6	764	752
2005	7	3	2	2	9	5	766	752
				LEASING ALTERNATIVE 2B				
1990	0	0	0	0	0	0	752	752
1995	0	0	0	0	0	0	752	752
2000	3	2	1	3	4	5	761	752
2005	4	2	2	2	6	4	762	752
				LEASING ALTERNATIVE 4				
1990	0	0	0	0	0	0	752	752
1995	0	0	0	2	0	2	754	752
2000	9	4	4	7	13	11	776	752
2005	15	5	4	5	19	10	781	752

[1] Employment of Reservation residents. Indirect jobs could occur either on or off-Reservation, direct jobs would occur off-Reservation at mine sites. Direct jobs include construction and operations employment.
[2] Includes Low Baseline and leasing alternative employment and represents the cumulative employment impact.

Source: BLM, 1988

TABLE 4A-26
POPULATION CHANGE[1] — COMMUNITIES ADJACENT TO CROW RESERVATION

	1990	1995	2000	2005
		LEASING ALTERNATIVE 2A		
Hardin	0	5	46	53
Sheridan	0	45	343	385
		LEASING ALTERNATIVE 2B		
Hardin	0	0	30	38
Sheridan	0	0	194	241
		LEASING ALTERNATIVE 4		
Hardin	0	5	73	102
Sheridan	0	45	552	750

[1] Changes measured against Low Baseline Alternative.

Source: BLM, 1988

4A.2.3C Income

Household income on the Crow Reservation would increase as a result of employment of Reservation residents under each of the three leasing alternatives. In 2005, household income on the Reservation is forecasted to be $977,000 greater than the Low Baseline Alternative level of $37,900,000, or a 3 percent increase due to Leasing Alternative 4. The change in Leasing Alternative 4 is the largest change in household income of the three leasing alternatives. Development associated with Leasing Alternative 2A increases household income by $454,000, and Leasing Alternative 2B increases household income by $357,000.

Increases in household income on the Reservation do not proportionally increase Reservation business activity. Business activity in the year 2005 is forecasted to increase by $131,000 from Leasing Alternative 2A. The change in the level of business activity for Leasing Alternative 2A falls between the $276,000 change for Leasing Alternative 4 and the $100,000 change in Leasing Alternative 2B.

The small amount of business activity generated from an increase in household income due to each of the three leasing alternatives illustrates a weak link between the Reservation economy and the economy of the rest of the Montana portion of the Powder River Region. A substantial portion of the household income on the Reservation is spent off the Reservation. Those funds which are spent on the Reservation do not circulate long before flowing off the Reservation. Therefore, off-Reservation development does not have a large impact upon on-Reservation business activity. (See Technical Report 1.)

Large scale regional development can lead to increased price levels. Based on studies of development in the past (Feeney, et al., 1986), some evidence indicates that price levels do increase with large regional developments.

While the level of price increases are difficult to forecast, it is likely that there would be an increase in price level on the Crow Reservation due to off-Reservation coal development. As prices rise, those households on fixed income or whose income does not keep up with increasing price levels, would experience a decline in purchasing power. More Reservation residents are likely to see declines in their standard of living relative to the rest of the region because fewer Reservation residents are expected to be able to take advantage of employment opportunities related to coal development. Given the distance of the Crow Reservation from the new mine tracts and the proximity of the Reservation to trade centers such as Billings and Sheridan, the upward pressure on prices is expected to be mild.

In conclusion, while each of the three leasing alternatives results in positive changes in household income and business activity, the magnitude of these changes would be small when compared to the 1986 levels. Therefore, changes to household income and business activity from each of the leasing alternatives would not be significant.

4A.2.4C Tribal Fiscal Conditions

Revenue

Tribal revenues are not expected to grow under any of the three leasing alternatives. The primary revenue sources of the Tribe are fees from livestock grazing, agricultural lease fees, and coal revenues. The Tribe does not tax persons, income, or property on the Reservation, so any increases in population and income on the Reservation do not lead to an increase in Tribal revenue.

Additional mining of Crow coal, currently occurring at the Absaloka mine, could significantly enhance revenues to the Crow Tribe. Because coal mining is an important revenue source to the Tribe, Tribal managers are concerned about possible reductions in Tribal revenues from competition between Crow coal and federal coal from the Powder River Basin. The following impact analysis was done as a result of their concerns which were also raised at the Crow Scoping Meeting.

Several points were considered in reaching a conclusion about possible impacts to Crow coal from leasing of federal coal tracts in Montana. These points are:

1. Crow coal is comparable in quality, quantity, and minability to both federal and fee coal in the Montana portion of the Powder River Region.

2. Recent exemption of the Montana coal severance tax and gross-proceeds tax on Indian coal would provide the Crow Tribe with more flexibility in negotiating coal contracts.

3. There would be significantly fewer miles of railroad construction needed for the development of Crow coal as compared to the Powder River I new mine tracts in Montana (see Map 1, map packet). It is expected that development of the 80-mile Tongue River Railroad would be necessary before these Round I tracts could be developed. Development of Crow coal in the Youngs Creek area (southeastern corner of the Crow Reservation) would be favorably situated to existing rail lines, approximately 6 miles away. Additional development in the Crow's "ceded area" (just north of the Crow Reservation) would require only 2 additional miles of rail.

4. Opportunities for development of Crow coal have been at least equal, if not better, to those of federal coal because of three moratoriums on federal coal leasing during the last 17 years. Currently, there is no Powder River II regional coal sale scheduled.

5. Crow coal reserves have been and continue to be available for leasing primarily at the discretion of the Crow Tribe.

Based on these considerations, it is not expected that leasing of Montana's Round I tracts would adversely affect the value of Crow coal. However, Powder River Basin coal coming from northern Wyoming could also be in competition with Crow coal. Coal mining operations in the Gillette, Wyoming, area have certain competitive advantages over coal operations in Montana, including Indian-owned coal. These advantages are:

1. The Wyoming new mine tracts leased at the 1982 Powder River sale, all in the Gillette area, contributed additional productive capacity to an area that currently has over-capacity through the year 2005. This would, if other things were equal, enhance northern Wyoming's ability to supply coal under new contracts.

2. Transportation costs could be more competitive from the Gillette area to eastern and southern markets because of competing railroad companies that serve the Gillette area.

3. Mines in the Gillette area generally have thicker coal seams, less overburden, and lower mining costs.

4. In the past, Wyoming coal severance taxes were less than those on coal in Montana, including Indian coal. That condition no longer is true. Given the recent exclusion of state severance taxes on Indian coal in Montana, it is unlikely that Gillette area coal (which is likely to have severance taxes of some amount) would maintain a tax advantage over Indian coal from Montana.

It is not clear whether these advantages would be offset by the exemption of the Montana severance and gross-proceeds taxes on Indian coal. It is likely, however, that federal coal from Wyoming tracts would pose a greater threat to Crow coal value than would federal coal from Montana tracts. The number of existing and proposed mines and undeveloped leases in the Gillette area suggest that, at least in the past, this area had the competitive edge for the Midwestern, Front Range, and Gulf Coast markets. The relative competitiveness and marketability of Crow coal vs. Gillette area coal would depend to a great extent on how successful the Crow are at identifying market areas and negotiating new contracts.

With the exception of the proximity of a railroad to Crow coal areas, the same general conclusion made above is also

appropriate to Northern Cheyenne coal. See Technical Report 5 for more detailed discussion of the possible impacts to Indian coal.

Expenditures

The off-Reservation population growth would create increased demands on some Reservation services. The impacts to services from the three leasing alternatives are indirect in nature. The level of these demands cannot be quantified for services and, therefore, expenditures were not calculated for these service demands. For a discussion of these demands see Chapter 4A, Section 4A.2.6C.

In conclusion, the development of any of the three leasing alternatives would have no significant impact on the level of Tribal revenues, while needed increases in expenditures for increased service demands due to each of the three leasing alternatives are expected to be insignificant, with the exception of housing, law enforcement, health care, roads, and social services.

4A.2.5C Tribal Government

The development associated with the three leasing alternatives would have little impact on the Crow Tribal government. This is because of the distance between the tracts and the Crow Reservation, and the resulting small changes to income, population, and employment to the Reservation from those projects. However, off-Reservation population growth could increase the pressure on Tribal government to provide higher levels of some services and to deal with problems concerning Crow Tribal members in the communities surrounding the Reservation.

4A.2.6C Housing, Services, Infrastructure

This section describes the impacts to housing, services, and infrastructure on the Crow Reservation due to changes associated with each of the three leasing alternatives. Because on-Reservation population growth for each of the leasing alternatives is expected to be insignificant (less than 1 percent over the Low Baseline population by 2005), impacts to housing, services, and infrastructure would not occur directly as a result of on Reservation population growth. However, there would be impacts to the Crow Reservation caused by growth in communities adjacent to the Reservation and by increased traffic across the Reservation due to leasing alternative projects. A high level of concern was expressed at the Crow Scoping Meeting (BLM, 1987) and at individual interviews on the Reservation regarding the possible impacts to Reservation service provision from regional coal development.

The beginning date of construction for each of the leasing alternatives is shown in Table 4-14. Full production at all mines, and maximum impact to services and infrastructure, would occur in 2004 for the three leasing alternatives and continue for approximately 40 years. This section discusses expected impacts to the various services from the three leasing alternatives.

Housing

Population growth in the off-Reservation community of Hardin due to each of the three leasing alternatives could increase the demand for rental housing in the Hardin area. If rental housing prices increase there, some Native Americans currently living in the Hardin area may be forced to return to the Crow Reservation to reside with family and/or relatives. This would exacerbate crowded housing problems which are currently (1987) severe and are expected to remain severe under Low Baseline conditions. Growth in Hardin is projected to be low; increases of 1, 1, and 3 percent over the Low Baseline level by the year 2005 are expected for Leasing Alternatives 2A, 2B and 4, respectively. Mild impact to Reservation housing is expected under Leasing Alternative 4; the impacts would be insignificant for Leasing Alternatives 2A and 2B.

Water, Sewer, and Solid Waste

There would be no significant impact to water, sewer, and solid waste services on the Crow Reservation from any of the leasing alternatives.

Education

Schools located on the Reservation are not discussed here because they are not expected to be affected by the implementation of any of the leasing alternatives. However, population inmigration in the Hardin area, due to the leasing alternative projects, would cause changes in the off-Reservation Hardin schools that are attended by a large number of Reservation students. Under Leasing Alternative 4, approximately 40 additional students (an increase of 3 percent) over Low Baseline levels would be expected to attend Hardin schools in the year 2005. That number would be 20 and 15 for Leasing Alternatives 2A and 2B, respectively. These students would be the dependents of inmigrating workers. The addition of these new students from outside the community could exacerbate the problems between Native Americans and non-Native Americans that already exist in these schools. Also, these schools are reportedly unprepared to deal with alcohol and drug problems and problems of understanding between cultures; both of these difficulties could increase with the addition of students from outside the area. Mild impacts to Reservation students who attend Hardin schools are expected from Leasing Alternative 4; impacts are expected to be insignificant from Leasing Alternative 2A and 2B.

Health Care

Implementation of each of the three leasing alternatives would have a variety of impacts on the Reservation health care delivery system. There would be higher demands for emergency medical services, ambulance services and CHS due to increases in road use and accidents. On-Reservation drug and alcohol abuse could increase as a result of regional population growth. This would not only generate an increased demand for addiction treatment, but would be associated with increases in alcohol-related diseases, accidents, suicides, and other violent behavior, all of which would place additional demands on health care service.

Population growth of Native Americans on the Northern Cheyenne Reservation resulting from the leasing alternatives would put pressure on the Crow Agency Hospital to handle outpatient overflow from the Lame Deer clinic. This would exacerbate an already crowded Crow Agency Hospital situation. In addition, major medical care for the Northern Cheyenne Reservation is provided by the Crow Agency Hospital. By 2005, the Crow Agency hospital would need an additional bed under each of the three leasing alternatives to handle the caseload increase from the Northern Cheyenne Native American population. This figure is in addition to a baseline demand of 13 additional hospital beds, half of which would need to be provided at Crow Agency Hospital by 2005 (see Technical Report 3).

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned at the Crow Scoping Meeting (BLM, 1987) and in individual interviews on the Reservation. Impacts to the health care system are expected to be mild under each of the three leasing alternatives. This would be due, in part, to the significant increases in Native American population projected for the Northern Cheyenne Reservation (10, 9, and 12 percent over Low Baseline figures for Leasing Alternatives 2A, 2B, and 4 respectively) which would create increased demand for medical services on the Crow Reservation. Impacts to Reservation health care from Leasing Alternatives 2A and 2B would be similar, but smaller in magnitude than for Leasing Alternative 4. The cumulative impacts of any of the three leasing alternatives, when combined with the Low Baseline Alternative, would be severe.

Law Enforcement

Implementation of each of the three leasing alternatives could have a variety of impacts on Reservation law enforcement. The police may need to respond to more traffic accidents due to increased Reservation traffic; more crime associated with increases in alcohol and drug abuse; more trespassing due to regional population growth; and more disputes involving Native Americans and non-Native Americans due to increased regional population. The Tribal Court system would likely see an increase in cases, particularly those involving credit transactions, business transactions and alcohol and drug-related offenses. The problems associated with multiple legal jurisdictions (see Chapter 3, Section 3.6.C) would further complicate the situation. Problems with law enforcement and multiple legal jurisdictions are of particular concern to Reservation members and were mentioned frequently at the scoping meetings and during individual interviews.

Mild impacts to law enforcement on the Reservation are expected from each of the three leasing alternatives because of the variety of problems, and difficulty in dealing with the problems, given jurisdictional issues. Impacts to law enforcement under Leasing Alternative 2A and 2B would be similar, but smaller in magnitude, than impacts from Leasing Alternative 4. The cumulative impacts of any of the three leasing alternatives, when combined with the Low Baseline Alternative, would be severe.

Fire Protection

The increase in automobile traffic, and possible increases in coal train traffic and trespass on the Reservation, could cause more range and forest fires. If a significant increase occurred in the number of fires, firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these impacts is unknown.

Roads and Railroads

Reservation roads would be affected under each of the three leasing alternatives. Under Leasing Alternative 4, traffic on Interstate 90 (from the northern border of the Reservation to the junction with U.S. 212) would rise 8 percent above current (1984, 1985, and 1986 average) levels (387 daily trips) by 2005. This figure for both Leasing Alternatives 2A and 2B is 3 to 4 percent over current levels (147 to 172 daily trips) by 2005. During the same period, under Leasing Alternative 4, traffic on U.S. 212 would increase 35 percent (392 daily trips) above current levels. Again, for Leasing Alternatives 2A and 2B, figures would be 13 to 16 percent (148 to 176 daily trips) above current levels. These estimates are based on increases in direct mine construction and operation commuter traffic. There would be additional traffic from indirect employment and increases in regional population travel for shopping, attending school, recreation, etc. Commercial truck traffic due to coal mines and increased regional business activity would also rise. However, these types of increases are very difficult to quantify. (These figures are given over current, rather than Low Baseline conditions, because there were no increases in commuter traffic estimated under Low Baseline conditions.)

Concerns regarding Reservation roads, particularly increases in truck traffic, were expressed at the Crow Scoping Meeting (BLM, 1987) and frequently during individual interviews. Impacts to roads would be mild to moderate for Leasing Alternative 4, and mild for Leasing Alternatives 2A and 2B due to the size of the traffic increases and because part of U.S. 212 is currently (1987) in need of repair. These traffic increases would cause higher maintenance costs and more accidents. Use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents may also increase.

Increases in rail traffic over existing rail lines could cause more accidents and fires along the rail beds. Changes in rail traffic due to hauling coal depend on where the coal is being transported. Because of the difficulty in predicting the location of future coal purchases, the level of significance of these impacts is unknown.

Recreation

Under each of the three leasing alternatives, regional population increases could lead to higher usage of recreation areas on the Reservation, such as the Big Horn River for fishing. Also, there could be increases in poaching, littering, trespassing, and conflicts over recreation resources and facility use. The changes would cause insignificant or mild impacts to Crow Reservation recreation.

Social Services

The changes in social organization and social well-being (including increased alcohol and drug abuse) could lead to more unemployment and family stress, which could create problems such as child neglect and poverty. This, in time, would result in an increased demand for social services, such as child protective services and general assistance. Increases in income that would occur if employment was obtained by Native Americans would decrease the demand for general assistance; however, these increases are expected to be very small. Impacts to social services were frequently mentioned concerns at the Crow Scoping Meeting (BLM, 1987) and in individual interviews on the Reservation. Mild impacts to social services are expected from each of the three leasing alternatives.

Other Services

Regional population growth as a result of each of the three leasing alternatives could lead to increasing pressures on a variety of other services, such as Little Big Horn Community College. Little Big Horn Community College may see an increase in non-Native American students from off-Reservation communities such as Hardin, but would receive no funding from the state or federal government for these students. These changes would cause insignificant or mild impacts to Little Big Horn Community College.

4A.2.7C Social Organization

Community social organization refers to the structures and processes that organize how people in a community relate to one another. The *Guide to Social Assessment* (Branch, et al., 1982) has identified patterns or forms of interaction that have been found to be particularly significant in determining what social changes occur in a community. These characteristics include: diversity/complexity, outside ties, distribution of resources/power, coordination and cooperation among people in the community, and patterns of personal interaction. These characteristics are used below to discuss impacts to social organization. See Technical Report 6 for a discussion of how this section was developed.

Changes in social organization would occur on the Crow Reservation under each of the three leasing alternatives because of the following factors: (1) migration of non-Native Americans onto the Reservation, (2) coal-related population increases in areas directly adjacent to the Reservation (e.g., the populations of Hardin, Montana, and Sheridan, Wyoming, can be used as an indicator), (3) Native Americans, both inmigrating and current residents, would obtain direct and indirect employment in the coal mine industry resulting in an increased annual payroll to Reservation Native Americans, (4) regional population growth in areas, such as Broadus, Miles City, Colstrip, Forsyth, Ashland, and Billings, that are not directly adjacent to the Reservation but, nevertheless, would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for such activities as shopping, recreation, or school, and (5) changes in social well-being (see Chapter 4A, Section 4A.2.8C). Table 4A-27 shows, by leasing alternative, the relative changes in each of these impact factors in the year 2005. Mild to moderate impacts to social organization are expected from Leasing Alternative 4; impacts from Leasing Alternatives 2A and 2B would be mild.

Greater contact with non-Native Americans would increase the diversity of ideas, values, and behaviors on the Reservation. These contacts could also heighten conflicts between Native Americans and non-Native Americans, in schools and recreation settings, for example, and cause more individual negative behaviors among Native Americans, such as alcohol and drug abuse. Although Tribal identity is expected to remain strong, increasing exposure to non-Crow ideas could cause cultural conflicts that result in problems for some individuals. Already existing conflicts among Crow groups on the Reservation may be exacerbated by development, making it harder to achieve coordination and cooperation among Tribal members.

Changes in the importance of kinship ties and sharing patterns may be slightly accelerated with the increased exposure to White society, resulting in less importance tied to these values. However, these sharing patterns would still act, to some degree, to redistribute the income received by individuals who obtain employment to a greater number of people.

4A.2.8C Social Well-Being

Under each of the three leasing alternatives, impacts to social well-being would occur due to changes in availability of services and facilities; changes in employment and business activity; stress caused by changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. Concerns regarding social well-being were frequently mentioned at the Crow Scoping Meeting and in individual interviews on the Reservation.

Stress on Reservation services and facilities are expected to be mild to moderate depending on the service and the alternative. Increases in social well-being would occur to those who were able to obtain employment or benefit from business expansion as a result of the increased income on the Reservation. Greater stress on individuals, due to changes in Reservation social organization and cultural conditions, and conflicts among Native Americans on the Reservation and with non-Native Americans both on and off the Reservation, could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Social conflicts and the perception that the Crow would not share in the benefits of coal development could lead to more crimes against people and property. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, child neglect, suicides and other violent behaviors, accidents, and crime. There is also concern that alcoholism and drug abuse make

TABLE 4A-27
CHANGES[1] IN IMPACT FACTORS — SOCIAL ORGANIZATION
Crow Reservation
2005

Factors	Low Baseline Alternative	Leasing Alternative 2A	Leasing Alternative 2B	Leasing Alternative 4
Inmigration of Non-Native Americans	0	12	12	27
Off-Reservation Population				
Hardin (1987 population = 3,535)	328	53	37	102
Percent change	9%	1%	1%	3%
Sheridan (1987 population = 17,334)	7,423	385	241	750
Percent change	43%	2%	1%	3%
Change in direct and indirect Native American Employment	0	9	6	19
Total annual associated payroll for Native Americans	0	$186,600	$132,900	$384,100
Level of impact to reservation roads	Mild	Mild	Mild	Mild to Moderate
Level of impact to social well being	Moderate	Mild	Mild	Mild to Moderate

[1] Unless otherwise indicated, Low Baseline figures are for 2005 measured against 1987; Leasing Alternative figures are for 2005 measured against the Low Baseline.

NOTE: Cumulative impacts can be obtained by adding leasing alternative and Low Baseline Alternative numbers together.

Source: BLM, 1987

it difficult to practice the traditional culture. In addition, access to alcohol and drugs could increase with the population growth in adjacent communities, such as Sheridan and Hardin.

There may be an increase in feelings of a local loss or lack of control because the decisions regarding coal development are made off-Reservation. Many individuals on the Reservation are very concerned about federal coal decisions because they feel these decisions would affect the Crow's ability to lease Tribal coal (see Chapter 3, Section 3.10.C). It is likely that, as a whole, Crow Tribal members would feel less well-off after regional coal development. Residents may perceive that they do not benefit from off-Reservation coal development and that off-Reservation coal competes directly with Tribally owned coal, preventing it from being developed.

Mild impacts to social well-being are expected for Leasing Alternatives 2A and 2B; mild to moderate impacts are expected for Leasing Alternative 4. See Technical Report 6 for a discussion of how this section was developed. See Chapter 4A, Section 4A.2.9C for related information on impacts to culture under the three leasing alternatives.

4A.2.9C Cultural Conditions

Moderate impacts would occur to Crow cultural conditions from each of the three leasing alternatives as measured against the Low Baseline Alternative. The specific impacts are the same as those described for the three leasing alternatives over the High Baseline Alternative (see Section 4.2.9C).

4A.3 MITIGATION

A wide variety of suggested mitigation is presented in Chapter 4, Section 4.3. Those mitigation suggestions would apply equally well to impacts under the Low Baseline Alternative.

4A.4 SHORT-TERM USES, LONG-TERM PRODUCTIVITY, IRREVERSIBLE RESOURCE COMMITMENTS, AND UNAVOIDABLE ADVERSE IMPACTS

These issues are discussed in Chapter 4, Section 4.4.

CHAPTER 5
CONSULTATION AND COORDINATION

A Notice of Intent (NOI) to prepare this Supplemental Environmental Impact Statement (EIS) appeared in the Federal Register on March 3, 1987. This NOI sought public participation in determining the scope and significance of issues to be analyzed. The NOI also announced that public meetings would be held in the areas that could be affected by the Powder River Round I federal coal lease sale of Montana tracts.

News releases announcing the public meetings were distributed to major news media in the area. Public meetings were held April 15, 1987, in Crow Agency (Crow Reservation), April 23 in Billings, and April 28 in Lame Deer (Northern Cheyenne Reservation). Letters requesting the public to participate were mailed prior to the meetings; stamped self-addressed scoping brochures and a general description of the project were enclosed with the letters. Scoping brochures were also handed out at the scoping meetings. The Scoping Summary Package for the Powder River Supplement, available from the Miles City District Office, summarizes and analyzes the input received at the scoping meetings.

The majority of scoping comments were in the following three areas: social concerns (including services), cultural concerns regarding Native American beliefs and values, and concerns about the physical environment. Based on the intensity of concerns at the scoping meetings regarding possible impacts to the belief and value systems, BLM contracted for the acquisition of additional input from cultural leaders on both Reservations regarding (a) the array of impacts likely to occur to Crow and Northern Cheyenne belief and value systems from Round I federal coal leasing and (b) suggested ways to mitigate any such impacts. The impact information is incorporated into Chapters 4 and 4A of this Supplement while the mitigation appears in Chapter 4, Section 4.3.

In addition to the formal scoping process described above, the EIS team consulted with a wide array of individuals in the course of this effort. These contacts were made for a variety of reasons, including obtaining information, discussing results of the analysis and discussing mitigation.

The following "Consultation and Coordination List" shows the contacts that were made by letter, telephone, and through personal interviews. The BLM extends its thanks to these individuals for their efforts in making this Supplement a more comprehensive and accurate document.

The Supplement's "Distribution List" follows the "Consultation and Coordination List" and shows the individuals/organizations to whom the Supplement was sent.

CONSULTATION AND COORDINATION LIST

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State

State of Montana

Director, Department of Commerce
Murdo Campbell, Montana Coal Board
Department of Fish, Wildlife & Parks
Office of the Governor
Department of Health & Environmental Sciences
Department of State Lands
Coal & Uranium Bureau
Department of Natural Resources and Conservation
Montana Intergovernmental Review Clearinghouse
Ed Bingler, Geologist, Montana Bureau of Mines & Geology

State of Wyoming

Alan Edwards, State Planning Coordination Office
Warren White, Natural Resources Advisor

Libraries

Renne Library, Montana State University
Documents Division, University of Montana
Eastern Montana College
Dull Knife Memorial College
Little Bighorn Community College
Colorado State University
Library of Colstrip
Bighorn County Public Library
Powder River County Public Library
Rosebud County Public Library
Henry Malley Memorial Library
Sheridan County, Wyoming, Public Library
Parmly Billings Library

Special Interest/Miscellaneous

Advisory Council on Historic Preservation
Larry Mehlaff, Sierra Club
Sierra Club, Montana Group
Natural Resources Defense Council
Public Lands Council
Tongue River Protective Association
Rosebud Protective Association
Clifton R. Merritt, American Wilderness Alliance
David Masselli, Friends of the Earth
David Alberswerth, National Wildlife Federation
Northern Plains Resource Council
Powder River Basin Resource Council
Terry Sopher, The Wilderness Society
Montana Association of Counties
Council of Energy Resource Tribes, Washington, D.C.
Council of Energy Resource Tribes, Denver, CO
Montana Intertribal Policy Board
Dee C. Taylor, University of Montana, Department of Anthropology
Rocky Mountain Natural Heritage, The Nature Conservancy
Jim Boggs
Mara Feeney
Stan Hill, Vice President, First Bank Billings
John McKean, Colorado State University

Individuals

There were about 25 individuals who also received copies of the EIS, including BLM's Miles City District Office 10-member District Advisory Council and David Schaenen, a Montana member of the BLM National Public Lands Advisory Council.

CHAPTER 6
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APPENDIX A
BILLINGS DISTRICT COURT ORDERS

APPENDIX A

FILED (126)

MAY 28 1985

LOU ALEKSICH, JR. CLERK
Deputy Clerk

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
BILLINGS DIVISION

THE NORTHERN CHEYENNE TRIBE, P.O. Box 128 Lame Deer, Montana 59043 Plaintiff, -vs- DONALD HODEL, Secretary of the Interior; THE UNITED STATES DEPARTMENT OF THE INTERIOR, Washington, D.C. 20240 (202) 343-7351 Defendants.	CV 82-116-BLG ORDER

Pursuant to the Memorandum Opinion filed this day in the above-captioned case,

IT IS ORDERED that:

1. Plaintiff's motion for summary judgment is granted;

2. Defendants' motion for summary judgment is denied;

3. Judgment shall be issued declaring that the Secretary of the Interior's decision to hold, and defendants' implementation of, the Montana portion of the Powder River Coal Sale of April 28, 1982, violated the National Environmental Policy Act, 42 U.S.C. § 4321 et seq., the Mineral Lands Leasing Act as amended by the Federal Coal Leasing Amendments Act of 1976, 30 U.S.C. § 181 et seq., their implementing regulations, and the federal trust responsibility to the Northern Cheyenne Tribe, in that the Sale was

formulated without adequate consideration of: (a) its cultural, social or economic effects on the Northern Cheyenne Tribe, the Northern Cheyenne Reservation, or any Reservation community, or (b) means to mitigate such effects;

4. All federal coal leases issued as a result of the Sale are void;

5. Defendants and their agents shall: (a) refrain from issuing federal coal leases arising from the Montana portion of the Sale, and (b) take all action necessary to rescind any issued federal coal lease arising from the Montana portion of the Sale.

The Clerk is directed to enter judgment accordingly.

The Clerk is further directed forthwith to notify counsel for the respective parties of the making of this order.

Done and dated this 28th day of May, 1985.

James F. Battin
Chief Judge

APPENDIX A

FILED (125)

MAY 28 1985

LOU ALEKSICH, JR. CLERK

Deputy Clerk

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
BILLINGS DIVISION

THE NORTHERN CHEYENNE TRIBE, P.O. Box 128 Lame Deer, Montana 59043 Plaintiff, -vs- DONALD HODEL, Secretary of the Interior; THE UNITED STATES DEPARTMENT OF THE INTERIOR, Washington, D.C. 20240 (202) 343-7351 Defendants.	)	CV 82-116-BLG MEMORANDUM OPINION

Plaintiff, the Northern Cheyenne Tribe, seeks judicial review of the Secretary of the Interior's final decision to sell coal leases on lands located in the southeastern Montana portion of the Powder River coal region. The Tribe requests declaratory and injunctive relief holding that the sale was held in violation of federal law and requiring that the Secretary void the sale, refrain from issuing leases, and rescind any leases that have been issued. The case is presently before the Court on motions by both the Tribe and the federal defendants for summary judgment. For reasons outined below, the Tribe's motion is granted, and the federal defendants' motion is denied.

FACTUAL AND PROCEDURAL BACKGROUND

In the late 1970's, as part of its comprehensive Federal Coal Management Program, the Department of the Interior proposed to make available for leasing portions of the

extensive federal coal holdings. These efforts marked the end of a decade where federal coal leasing had been halted for various reasons by both congressional and judicial action. The Powder River coal region of southeastern Montana and northern Wyoming, one of twelve coal leasing regions nationwide, is one situs of the Department's renewed leasing activity. On April 28, 1982, the first of a planned series of lease sales in this region was held. This sale was the largest sale of federal coal leases held up to that time. The Secretary's decision to hold this sale is the focus of the Northern Cheyenne Tribe's challenge.

The Northern Cheyenne Indian Reservation lies amidst the Power River coal region. In the April 1982 sale the Department offered to lease eight tracts in Montana containing approximately 465 million tons of federal coal. Other tracts situated in Wyoming were also offered. The eight Montana tracts, which include both "production maintenance" and new mine tracts, surround the Reservation on its north, east, and south sides, and the tracts lie in close proximity to the Reservation's borders: the farthest is only about 16 miles from the Reservation's southern border. The Department plans subsequent sales to lease additional tracts, and several of the areas being considered for future sale are also adjacent to or near the Reservation.

The leasing of federal coal is governed in part by the Federal Coal Leasing Amendments Act of 1976 (FCLAA), 30 U.S.C. §§ 201, et seq., which amended the Mineral Leasing Act of 1920, 30 U.S.C. §§ 181, et seq. and the Surface Mining

Control and Reclamation Act of 1977, 30 U.S.C. §§ 1201, et seq. The Secretary has formulated leasing regulations pursuant to the FCLAA. See 43 C.F.R. §§ 3400, et seq. The FCLAA contemplates that federal coal be developed in four somewhat discrete steps: land use planning, activity planning, coal lease sales, and eventually, mining.

The Northern Cheyenne Tribe focuses its concerns on the activity planning stage of coal development. In activity planning specific tracts of coal are identified from land use planning documents and are studied for possible sale. The goal of activity planning is to provide recommendations to the Secretary pertaining to specific tracts to lease, the amount of coal to sell, and how the sale should be timed. Development of leasing targets and a regional production goal and preparation of an EIS to identify the environmental impacts of a proposed sale are integral parts of the activity planning process.

Activity planning is guided by a Regional Coal Team (RCT). The Powder River RCT is composed of the governors and the state BLM directors of Wyoming and Montana. Other federal, state and local officials are ex officio, or non-voting, members of the RCT. Representatives from both the Northern Cheyenne and Crow Indian Tribes were invited to participate as ex officio members of the RCT.

Activity planning commenced with the call for expressions of leasing interest in the Powder River Basin. See 45 Fed.Reg. 21718 (April 2, 1980). The RCT selected lease tracts for inclusion as alternatives in the EIS and ranked

those tracts high, medium, or low, in the categories of coal economics, impacts on the natural environment, and socioeconomic impacts. Specific tract-ranking factors were submitted by the BLM to the RCT for consideration, and after publication and public comment the factors were adopted at a January 1981 RCT meeting. Tract selection and ranking were completed at an RCT meeting held on May 21, 1981.

Leasing targets and regional production goals were also developed during the activity planning stage. Leasing targets are established "for the purposes of setting Departmental priorities, aiding the states in planning for potential future impacts of coal development, and supplying the guidance for establishing the amount of coal to be offered through proposed lease sale schedules." 43 C.F.R. 3420.3-1(b) (1981). On June 7, 1979, the Secretary set a tentative leasing target of 776 million tons to achieve 1985 to 1987 production levels for the Powder River region. In January 1981 the Department established a new leasing target pursuant to 43 C.F.R. 3420.3-2(a)-(j) directed at production levels through 1990. Upon the recommendation of the RCT a leasing target of 1.5 billion tons was selected, and this new target was the basis of the preferred alternative in the Powder River EIS.

The coal management regulations require that a regional EIS on the alternate lease sale schedules be prepared in accordance with the provisions of the National Environmental Policy Act, 42 U.S.C. § 4321. The EIS is to be prepared as part of the activity-planning process and is to

include both site-specific and cumulative intraregional analyses. See 43 C.F.R. § 3420.4-5. To that end, the Department commenced planning of the Powder River Region EIS in July 1979. Site specific analyses of the environmental impacts of each tract being considered for lease sale were completed in December 1980 and were used by the RCT during tract ranking at the January 1981 RCT meeting. These tract profiles were adjusted to correct for action taken by the RCT subsequent to completion of the profiles. The tract profiles were then incorporated by reference into the EIS. The cumulative analysis began with EIS scoping and significant issue analysis which occurred in late 1980 and early 1981. These analyses were incorporated into a preliminary preparation plan, a preliminary cumulative analysis, and later a preliminary report on alternatives and impacts.

A draft EIS was issued on June 24, 1981. After public hearings and the close of the comment period on the draft EIS on September 17, 1981, the draft EIS and the comments were submitted to the RCT for final consideration. Subsequently, on December 1, 1981, the final EIS was published.

The final meeting of the RCT on December 1, 1981, resulted in a recommendation to the Secretary that 13 coal tracts in both Montana and Wyoming be offered in the first sale. On February 22, 1982, the Secretary decided to offer 15 tracts containing an estimated 2.24 billion tons of recoverable reserves for competitive lease sale and four additional Montana tracts to be sold by intertract sale

procedures. The Secretary adopted a sale schedule with the first sale to be held on April 28, 1982, in Cheyenne, Wyoming. Subsequently, six tracts were withdrawn from the original sale notice due to absence of surface owner consents or discrepancies in estimated tonnage.

In March and April of 1982 the Tribe initiated an intensive effort to convince the Department to address the Tribe's concerns about the sale. Discussions were held with numerous Department officials. Tribal representatives and attorneys in discussions, telephone calls, and written submissions, stated their concerns that the Department had inexcusably failed to address impacts on the Tribe in the process leading up to the decision to hold lease sales. The Secretary denied further consideration of the Tribe's claims.

On April 21, 1982, the Tribe filed this suit, together with a motion for a temporary restraining order, in the United States District Court for the District of Columbia. Although the context is more complicated, the Tribe basically complains that although this lease sale will result in a dramatic escalation of coal development close to the Reservation, the Department and the EIS planners failed to consider either the effects--primarily social, economic, and cultural effects--of this development on the Tribe or measures to mitigate those effects. The Tribe asserts that this is a fatal defect in the decisional process and the EIS.

After a hearing on April 22, 1982, the Tribe's motion for a temporary restraining order was denied, and the lease sale proceeded as scheduled. Bids were received on 11

tracts in Montana and Wyoming containing approximately 1.53 billion tons of coal. Bidders were notified prior to the sale of a lis pendens on the sale brought about by this litigation. All of the leases have been granted to successful bidders. The leases have been conditioned upon the outcome of this case.

On June 1, 1982, the District of Columbia court consolidated this case with National Wildlife Federation, et al. v. Burford, CV-82-117-BLG. Both cases were transferred to this Court by Order dated June 7, 1982. Although both cases arise out of the Powder River Coal Sale, they present the Court, except in one instance, with entirely different issues. Only one issue concerning the validity of the Department of the Interior's manner of treating surface owner consent under the Surface Mining Control and Reclamation Act (SMCRA) is commonly raised by both the Northern Cheyenne Tribe and the National Wildlife Federation (NWF) plaintiffs. The Court has found it unnecessary to reach this common issue with respect to the Tribe's claims and has determined that it is more convenient to separate these cases for decision.

JURISDICTION AND SCOPE OF REVIEW

Jurisdiction in this Court is founded on 28 U.S.C. §§ 1331, 1332, 1361 and, more particularly, 1362. Section 1362 provides for district court jurisdiction in civil actions brought by an Indian tribe recognized by the Secretary of the Interior "wherein the matter in controvery arises under the Constitution, laws, or treaties of the United States." Plaintiffs seek review of an agency action pursuant

to the judicial review provisions of the Administrative Procedure Act (APA), 5 U.S.C. §§ 701-706. Section 702 of the APA waives sovereign immunity to suit and provides for judicial review where a person, in this case the Tribe, is "adversely affected or aggrieved by agency action within the meaning of a relevant statute" and seeks relief other than money damages. The Court may hold unlawful and set aside agency action which is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" or accomplished "without observance of procedure required by law." 5 U.S.C. § 706(2)(A), (B).

The APA's "arbitrary and capricious" standards limit this Court's scope of review. In Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402 (1971), the Supreme Court stated that before a court may overturn an agency decision under this standard,

> [t]he court must consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment. Although this inquiry into the facts is to be searching and careful, the ultimate standard of review is a narrow one. The court is not empowered to substitute its judgment for that of the agency.

Id. at 416 (citations omitted). Agency decisions may be reversed only if no reasonable basis for the decision has been given by the agency. See, Bowman Transportation, Inc. v. Arkansas-Best Freight System, Inc., 419 U.S. 281, 285-86 (1974). Generally, the Court must confine its review to the full administrative record which was before the agency and on which the agency determination was based. See, Camp v. Pitts, 411 U.S. 138, 142 (1973); but see Public Power Council

v. Johnson, 674 F.2d 791 (9th Cir. 1982) (outlines the narrow exceptions to the general rule). The Court must accord great deference to the agency's interpretation of the regulations it is charged with administering. See Udall v. Tallman, 380 U.S. 1, 16 (1965).

The Court's role in reviewing the Department's actions under NEPA has a two-fold purpose. First, and most important to the instant case, the Court must ascertain whether the Department took a "hard look" at the environmental consequences of its actions by observing the procedure required by law to disclose and consider every significant aspect of the environmental impact of the proposed action. See Kleppe v. Sierra Club, 427 U.S. 390, 410 n. 21 (1976). "Under this standard of review, we employ a 'rule of reason' that inquires whether an EIS contains a 'reasonably thorough discussion of the significant aspects of the probable environmental consequences'". State of California v. Block, 690 F.2d 753, 761 (9th Cir. 1982) (quoting Trout Unlimited, Inc. v. Morton, 509 F.2d 1276, 1283 (9th Cir. 1974)). Second, the Court must ensure that the Department has met its substantive obligations by applying the "arbitrary and capricious" standard to the Department's conclusions. See Baltimore Gas & Electric Co. v. Natural Resources Defense Council, 462 U.S. 87, 97-98 (1983); Isaac Walton League v. Marsh, 655 F.2d 346, 371 (D.C. Cir.), cert. denied, 454 U.S. 1092 (1981).

DISCUSSION

A. Duty To Consider Impacts On The Tribe Under NEPA

The decision to hold the Powder River coal sale was subject to the requirements embodied in NEPA. The sale was a major federal action significantly affecting the quality of the human environment and therefore required an environmental impact statement to be prepared to aid the decision. See 42 U.S.C. § 4332(2)(C); see, e.g., Environmental Defense Fund v. Andrus, 596 F.2d 848, 851 (9th Cir. 1979) (per curiam). The Department itself has recognized in its publications and regulations that an EIS must be prepared when formulating regional coal sales under the Federal Coal Management Program. See Final Environmental Statement, Federal Coal Management Program (Program EIS) at 3-9, 3-63, 3-68, 5-123, 5-124; 43 C.F.R. §§ 3400.4(c), 3420.4-4, -5.

The environmental impact statement must, among other things, detail "the environmental impact of the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, [and] alternatives to the proposed action . . . ." 42 U.S.C. § 4332(2)(C). Agencies are obliged under NEPA to identify and investigate the impacts upon the existing environment that are likely to occur by reason of the alternatives under consideration. The environmental consequences of the proposed action must then be integrated into agency decision-making. See Andrus v. Sierra Club, 442 U.S. 347, 350 (1979). For an EIS to serve its intended purpose "as an action-forcing device to ensure that the policies and goals defined in [NEPA] are

infused into the ongoing programs and actions of the federal government . . ." 40 C.F.R. § 1502.1 (1981), the agency should use the EIS as a tool in decision-making and not merely as a disclosure document after the decision to proceed with a proposed action has already been made. Coalition For Canyon Preservation v. Bowers, 632 F.2d 774 (9th Cir. 1980). Finally, and logically, the agency must take advantage of the opportunities provided in the NEPA process to investigate and consider measures to mitigate or find alternatives to adverse environmental impacts to the fullest extent possible. Calvert Cliffs' Coordinating Committee, Inc. v. Atomic Energy Commission, 449 F.2d 1109, 1128 (D.C. Cir. 1971).

Included among those effects that must be assessed in an EIS are the social and economic impacts of the proposed action. Section 102a of NEPA, 42 U.S.C. § 4332(2)(A) requires that federal agencies, to the fullest extent possible, "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have an impact on man's environment." The Council on Environmental Quality (CEQ) regulations, which have been adopted by the Department of the Interior, see 45 Fed.Reg. 27541, 27544 (March 18, 1980), define effects or impacts broadly to include "ecological . . ., aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative." 40 C.F.R. § 1508.8(b).

The Department faults the Tribe's emphasis on social and economic impacts in its attack on the EIS. The

Department argues that the Tribe basically misunderstands NEPA and that it is trying to shift NEPA's focus from the natural, physical environment to sociology and economics. Citing Goodman Group, Inc. v. Dishroom, 679 F.2d 182, 185 (9th Cir. 1982), the Department implies that it has more discretion to reject social, economic, and cultural issues from consideration in an EIS. In this instance, however, this assertion is incorrect.

In its definition of the human environment, the CEQ recognizes that economic and social effects do not, by themselves, necessitate the preparation of an EIS. Thus, a federal renewal project such as was the case in Goodman, or the construction of a detention center, low income housing project, post office, or other public facility in a neighborhood, even if the facility has potential to increase crime and traffic, reduce property values, or otherwise change the character of the neighborhood, does not fall within the ambit of NEPA. See, e.g., Como-Falcon Community Coalition, Inc. v. U.S. Dept. of Labor, 609 F.2d 342, 345-46 (8th Cir. 1979), cert. denied, 446 U.S. 936 (1980); Nucleus of Chicago Homeowners Assn. v. Lynn, 524 F.2d 225, 231 (7th Cir. 1975), cert. denied, 424 U.S. 967 (1976). These federal actions simply have no nexus to a physical effect on the natural environment. But if an impact statement is otherwise required because the proposed action impacts the natural or physical environment, then the agency must consider all impacts of the action including the interrelated economic or social impacts. See 40 C.F.R. § 1508.14.

In a recent case, the Supreme Court examined the relationship between a particular effect and the environmental effect caused by the proposed action that must be present before an agency is required under NEPA to consider the effect. Metropolitan Edison Co. v. People Against Nuclear Energy, 460 U.S. 766 (1983), concerned the restarting of the nuclear reactor at Three Mile Island that had been damaged in a serious accident. A group of local residents contended that restarting the reactor would adversely affect the psychological health of citizens in the area and would seriously damage the well-being of neighboring communities. The Court concluded that the agency was not required under NEPA to consider the group's contentions. The Court found that:

> [T]he terms "environmental effect" and "environmental impact" in § 102 [of NEPA should] be read to include a requirement of a reasonably close causal relationship between a change in the physical environment and the effect at issue. This requirement is like the familiar doctrine of proximate cause from tort law.

Id. at 774. The Court further found that "a risk of an accident is not an effect on the physical environment." Id. at 775. Because this risk and its perception were necessary middle links in the causal chain, "the element of risk lengthens the causal chain beyond the reach of NEPA." Id.

Applying the Metropolitan Edison analysis to the instant case, it is clear that the physical disturbance, here the mining of the coal sold at the lease sale, is the proximate cause of the expected socioeconomic impacts in the affected area. A substantial increase in regional coal mining will cause not only those socioeconomic impacts which

may directly arise from the physical disturbance, for example, displacement of area residents from homes or disruption of ranching or farming by the actual encroachment of a strip mine onto land previously used for those purposes, but also those indirect socioeconomic impacts including the social disruption caused by increased numbers of miners, their families, and others who will provide services, the increased demand for schools, housing, water and sewer services, and the increased strain on local governments. This indirect and direct social and economic disruption is not a risk; it flows inevitably from mining of federal coal in the region. The Department was required to consider the socioeconomic impacts of federal coal development on the surrounding area.

The Department itself recognized the necessity to investigate in detail the social and economic effects of federal coal development in the region.

> The issue of primary concern is the impact of coal mine development and population increases to communities. Many other resource impacts are presented and analyzed here; water resources, reclamation, air quality, sociology, economics, and railroad transportion are of primary significance.

Powder River Final Environmental Impact Statement at 1 (emphasis added). The scope of the socioeconomic data sought by the Department to rank tracts for leasing is set out in Table 1-2 of the EIS and includes both direct and indirect socioeconomic factors. Id. at 11. A review of the EIS indicates, however, that the Department's ostensible concern with socioeconomic impact did not evolve into any meaningful analysis of the extent of such impacts on certain groups of

residents within the affected area, particularly the Northern Cheyenne Tribe.

It appears obvious that the Department was required to consider the impacts, including social and economic impacts, of federal coal development on the Northern Cheyenne community. Merely consulting a map and noting the close proximity of the lease tracts to the Reservation logically leads to this conclusion. Further, the population of the Indian community on the Reservation is sizeable in comparison with surrounding communities that did receive the attention of the EIS preparers.

Despite the need to consider coal development impacts on the Northern Cheyenne Tribe, a perusal of the Powder River coal region EIS unearths relatively few references to the Tribe or Tribal lands. There are a few passing references to the Reservation's Class I air quality status, Powder River Final Environmental Impact Statement, at 2, 38, and to the potential for increased traffic on Reservations roads and the necessity of upgrading these roads. Id. at 3, 41, 64. There are a few other references to the Reservation's coal reserves, Id at 7, and to certain leases authorized by the Northern Cheyenne exchange legislation, P.L. 96-401. Id. at 1, 7, 30. The closest the Department comes in the EIS to recognizing any socioeconomic impact on the Reservation is in an isolated statement lacking analysis on page 65 of the EIS: "In Ashland there is a potential for conflicts between the newcomers and the native Americans. It is likely the native Americans would feel their lifestyle and community (both in

Ashland and on the Reservation) has been threatened by newcomers." It is evident that the concerns of the Northern Cheyenne Indian Tribe as an entity have been largely ignored in the EIS.

The Department attempts to explain how impacts of federal coal development on the Tribe and its reservation are addressed in the EIS by assuming the following position:

> When all is said and done, plaintiff's complaint is that the Environmental Impact Statement does not deal with the effects of the Powder River Sale on Indians. Rather, it deals with Indians simply as people affected by the sale and their reservation as any other real estate in the sale area. This was a conscious decision of the Department of the Interior. Prior to the preparation of the EIS the Interior team considered whether Indians would be affected as Indians rather than as individuals in the sale area and it was determined that they would not. The environmental analysis was, therefore, continued without regard to the tribe as a tribe but as potentially affected citizens in the sale area.

Federal Defendants' Opposition to Plaintiffs' Motion for a Temporary Restraining Order at 11. Not only does this position virtually concede that the Northern Cheyenne Tribe was not treated as an entity, but it is both refuted factually by the record and legally unsound.

Neither the EIS nor the administrative record reflects that members of Indian communities situated near the lease tracts were in fact treated "as potentially affected citizens in the sale area." The EIS devotes much of its sparse socioeconomic analysis[1] to discussion of potential

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[1]Although the Court's decision focuses on the exclusion of essential information from the EIS rather than relying upon the quality of the analysis which was attempted, the Court notes that the cultural, social, and economic impact analysis

impact to the off-reservation communities of Ashland, Broadus, and Hardin. For those communities analyses of the socioeconomic impacts of the proposed coal development, including population increases, schools, medical facilities, law enforcement, dwelling units, and employment were prepared. Despite the comparable population of Lame Deer, and the fact that it and other communities within the Reservation lie closer to the lease tracts than some of the off-Reservation communities that were studied, there is no evidence that socioeconomic or cultural impacts on the Northern Cheyenne Tribe were considered. The EIS, for example, does not acknowledge the existence of the tribal government and its powers and responsibilities, does not recognize that the Reservation is culturally distinct within the region, and does not consider that the different structure of public finance on the Reservation may vary the Tribe's ability to mitigate the impacts of increased coal development as compared to surrounding communities. Throughout the EIS it

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[1] in the Powder River EIS is strikingly deficient when compared to EISs for similar federal actions. For example, the Green River-Hams Fork Regional Coal EIS, submitted by the department as part of the administrative record in this case, contains a significantly greater depth of analysis of these matters. The BLM's Uintah Basis Synfuels Development EIS, issued in 1983 and submitted as an exhibit by the Tribe, demonstrates a separate and much more careful analysis and consideration of the social, economic, and cultural impacts upon a reservation of nearby energy development.

The Tribe blames the apparent deficiencies in the EIS's social and economic analysis on a rushed timetable and a inflexible deadline for completion of the EIS. There is evidence in the record bearing out the Tribe's contention. See, e.g., Admin. Record at 105, 199, 245, 260, 261, 278.

appears that discussion of the social, economic, and cultural impacts of federal coal development on the Northern Cheyenne Tribe, either as a tribal entity or simply as people affected by the sale, has been systematically excluded.

Even if socioeconomic impacts on the Northern Cheyenne Tribe were somehow combined with the data from off-reservation communities and reported in the EIS on a county-wide basis, the assumption that the Northern Cheyenne Tribe can be treated merely as potentially affected citizens within the sale area is faulty. As stated earlier, the Northern Cheyenne Tribe is culturally discrete and its governmental structure, income, and services differ substantially from its off-reservation counterparts. In the extensive Federal Coal Management Program EIS the Department acknowledged that federal coal development would uniquely impact Indian tribes, and it recognized a specific need to analyze in the regional EISs the impact of coal development to Indian communities.[2] Similar conclusions were drawn in an

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[2]Among the several references in the program EIS which recognize that federal coal development will uniquely affect Indian tribes are the following:

> The regional assessments will include . . . [s]ite specific urban impact analysis and assessment of effects on rural and community development. A special situation may exist in some western localities where population increases occur adjacent to Indian communities in which English is not spoken and traditional lifestyles of the inhabitants predominate.
>
> * * *
>
> The Department recognizes that the real impacts of Federal Coal Management decisions are felt directly by individuals and families. It also recognizes

Energy Impact Steering Group Report which was cited with approval in the program EIS.[3] Both the programmatic EIS and the steering group report evidence that the Department was fully aware that federal coal development may uniquely impact

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[2] that some impacts are easier to measure than others. The change from a stable rural environment to a more diverse and unpredictable setting, which combines both rural and urban activity, creates losses for some individuals which are real but difficult to quantify. Such changes may also intensify social tensions, such as those between Indians and non-Indians where coal development occurs near Indian reservations and between the resident ranchers and farmers and the new families attracted by the coal development employment opportunities. These losses and tensions are also the least likely to be avoided or minimized through mitigation efforts.

* * *

It should be noted in those areas with high rates of unemployment, such as Indian reservations, energy development will have both positive and negative effects. As noted above, the probability of social and cultural conflicts is high. Further, seemingly impossible demands upon existing infrastructures will strain the ability of local communities to deliver essential services. The positive effects will include substantial increases in the demand for labor, and, over time, generation of significant levels of public revenues derived from energy resources.

Final Environmental Statement, Federal Coal Management Program, at 5-124, 125.

[3] The Energy Impact Steering group made the following findings:

If the new population is located in a political and taxing jurisdiction different from the one which realized the increase in tax base, serious financial obstacles to accommodating growth may result from such a jurisdictional mismatch. In some cases, even the added employment is not welcomed by local residents. If the energy development activities merely bring in outsiders (particularly temporary construction workers) who take the jobs and disrupt traditional social and economic patterns, signifi-

an Indian tribe because the tribal communities are not similarly situated to non-Indian communities off the reservation.

> [3]cant community resistance may occur. These social disruption impacts are particularly acute on Indian reservations and in rural communities which have maintained traditional social and political structures and have had little experience with assimilating newcomers.

Report to The President, Energy Impact Assistance, at 8.

> Indian reservations experiencing energy development face unique social and cultural stresses. The life-style of Tribal members who take jobs related to energy development may undergo radical change. To the extent that development-related jobs result in an increased regular income, the impacts on life-style may be positive, with benefits possibly accruing to an entire extended family. However, some Indians who fill new jobs may be leaving traditional means of support to do so. Such Indians will face pressure to conform to non-Indian patterns of behavior and to fulfill unfamiliar expectations. The resulting pressures on family relationships and living patterns can be considerable.
>
> Although reservations are often areas of high unemployment, much of the local population may not have the skills necessary or the opportunity to fill the jobs created by energy development. Consequently, development is likely to bring with it not only an increase in population but an influx of non-Indian population to and near the reservation. Indian language, cultural values and traditions are likely to be rejected by the new population. New ideas and needs will cause political confrontations on the reservation or with nearby local non-Indian governments. In addition, the stress created as a result of rapid social change increases the potential for inter-cultural conflicts.

Id. at 13-14.

> Indian tribes facing energy development possibilities will have impact problems comparable to the worst of those facing other largely rural communities, but because of the unique Federal Trust Relationships with Indian tribes, additional and different responses will be necessary.

Further, the Department was cognizant of a need to carefully identify and address these impacts and develop measures to minimize or mitigate the adverse effects. These concerns did not, however, carry through to the Powder River Regional EIS.

Finally, both the EIS and the underlying record are devoid of any explanation or justification for the Department's "conscious decision" to treat Tribal members as merely residents of the area for purposes of the EIS. Thus, considering that the record before this Court is complete, the Court can come to no other conclusion than that the Department's "conscious decision" was arbitrary. See Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402 (1971). More likely, the decision was merely an afterthought to rationalize deficiencies in the EIS. Post hoc rationalization is not part of the administrative record and cannot repair a deficient EIS. See National Resources Defense Council v. Morton, 458 F.2d 827 (D.C. Cir. 1972).

Therefore, the Court concludes that for the Department to take a "hard look" at the environmental consequences of its actions it was required to disclose and consider the social, economic, and cultural impacts of the proposed coal development on the Northern Cheyenne Indian Tribe as an entity. Neither the EIS, other decisional documents, nor the administrative record reflect that the Department undertook this analysis. Thus the EIS did not "insure a fully informed and well considered decision" to develop federal coal in the Montana portion of the Powder River Region. Vermont Yankee, 435 U.S. at 558.

B. Duties Under The Federal Coal Leasing Act Amendments

Independent of the duty created by NEPA, the Secretary was also required to consider the socioeconomic impacts of coal development on the Northern Cheyenne Tribe under the Federal Coal Leasing Act Amendments (FCLAA) of 1976. 30 U.S.C. § 201(a)(3)(C) provides that:

> Prior to the issuance of any coal lease, the Secretary shall consider effects which mining of the proposed lease might have on an impacted community or area, including, but not limited to, impacts on the environment, on agriculture and other economic activities, and on public services . . . .

Though the term "consider" has not been interpreted in the context of this statute, the Ninth Circuit has held under another statutory scheme that to "consider" social, economic, and environmental impacts "means to investigate and analyze, not merely to speculate on the basis of information that is already available, however incomplete." City of Davis v. Coleman, 521 F.2d 661, 679 (9th Cir. 1975). As already noted with reference to NEPA obligations, nothing in the environmental impact statement or other documents considered by the Secretary leading to the decision to sell coal leases reflects that the Secretary considered the social and economic impacts on the Northern Cheyenne community.

C. Defendants' Obligations Under The Special Relationship.

Generally, a special relationship exists between the United States and Indian tribes. Out of one aspect of this relationship arises legally enforceable obligations owing to the tribes by the federal government. These obligations have been likened to the fiduciary obligations that

exist between a trustee and a beneficiary. See, e.g., Seminole Nation v. United States, 316 U.S. 286 (1942). In the instant case the special relationship between the United States and the Northern Cheyenne Tribe required the Secretary to carefully disclose and consider significant impacts of the proposed coal development on the Tribe.

The special relationship has evolved judicially. It originated with the Supreme Court's early decision in Cherokee Nation v. Georgia, 30 U.S. (5 Pet.) 1 (1831), where Chief Justice Marshall characterized Indian tribes as "domestic dependent nations" and concluded that "their relation to the United States resembles that of a ward to his guardian." Id. at 17. Since that time the relationship has been a cornerstone in the development of Indian law. See generally, F. Cohen, Handbook of Federal Indian Law (1982 ed.) at 220.

Unless Congress has acted otherwise, the special relationship imposes strict fiduciary standards of conduct on federal executive agencies in their dealings with Indian tribes. See, United States v. Creek Nation, 295 U.S. 103 (1935). The Supreme Court, while addressing an alleged mispayment of funds intended for tribal members, stated:

> In carrying out its treaty obligations with the Indian tribes, the Government is something more than a mere contracting party. Under a humane and self imposed policy which has found expression in many acts of Congress and numerous decisions of this Court, it has charged itself with moral obligations of the highest responsibility and trust. Its conduct, as disclosed in the acts of those who represent it in dealing with the Indians, should therefore be judged by the most exacting fiduciary standards.

Seminole Nation v. United States, 316 U.S. at 296-297.

Principals of the trust responsibility have been applied by courts in many situations to establish and protect the rights of Indian tribes. See Cohen at 220.

That a special relationship exists between the United States and the Northern Cheyenne Indian Tribe has been recognized by all three branches of government. The United States entered into treaties and agreements with the Northern Cheyenne in 1825 (7 Stat. 255, II C Kappler, Indian Affairs --Laws and Treaties, 232 (1904)), 1868 (15 Stat. 655, II C Kappler at 1012), and 1877 (19 Stat. 254, I C Kappler at 168). These treaties express the intention of the United States to protect the Northern Cheyenne and their property. In 1934, Congress enacted the Indian Reorganization Act (IRA), 25 U.S.C. § 461 et seq., as part of a sweeping change in federal policy to revitalize tribal governments and to prevent further erosion of the tribal land base which had been caused by unsuccessful allotment and assimilation policies of previous decades. The Northern Cheyenne Tribe availed itself of the provisions of the IRA, and the Secretary of the Interior in his capacity as trustee approved the Constitution and By-laws that were adopted by the re-organized Tribe. See 25 U.S.C. § 476. In other instances the Secretary of the Interior has recognized his trust obligation to the Northern Cheyenne Tribe. In a decision issued on June 4, 1974, regarding reservation coal leases and permits, Secretary Morton held:

> As Trustee I take cognizance of my responsibility to preserve the environment and culture of the Northern Cheyenne Tribe and will not subordinate

> these interests to anyone's desires to develop the natural resources on that reservation.

In 1980, Congress, at the behest of the Tribe, passed the Act of October 9, 1980, which rescinded coal leases and prospecting permits on the Northern Cheyenne Reservation. In so doing, Congress found that

> although such leases and permits were approved by representatives of the Secretary of Interior, there are serious questions whether such approval is lawful and consistent with the trust responsibility of the Secretary of the Interior 'to act in the best interests' of Indian tribes and individuals . . . .

P.L. 96-401, 94 Stat. 1701 § 1(3) (1980). Finally, the special relationship between the government and the Northern Cheyenne has been recognized judicially. In Northern Cheyenne Tribe v. Hollowbreast, 425 U.S. 649 (1976), the Court recognized "Congress' unique obligation toward the Indians." Id. at 656. The Ninth Circuit has noted "that the government also has a fiduciary relationship with the Northern Cheyenne Tribe." Nance v. Environmental Protection Agency, 645 F.2d 701, 711 (9th Cir. 1981), cert. denied, 454 U.S. 1081 (1981).

Thus, it is clear that a special relationship has existed between the United States and the Northern Cheyenne Tribe for more than 150 years. The Court must determine whether this relationship, as it has been defined above, obligated the Department of the Interior to consider the impacts upon the Tribe of the lease sale of large deposits of federal coal situated adjacent to the Reservation.

The trust responsibility applies not only to on-reservation dealings with tribal property and funds but also extends to other federal action outside the reservation which

impacts a tribe. In Pyramid Lake Paiute Tribe of Indians v. Morton, 354 F.Supp. 252 (D.D.C. 1973), a Tribe brought an action challenging a regulation promulgated by the Secretary of the Interior governing the allocation of water to an irrigation district in Nevada. The regulation established the amount of water to be diverted to the irrigation district from a diversion point located outside of the Tribe's reservation. The consequence of any diversion was to prevent the water from flowing into Pyramid Lake, a desert lake located on the Tribe's reservation. This decrease in water endangered the lake environment and threatened the Tribe's traditional uses of the lake. In Pyramid Lake, therefore, the Court was required to directly confront conflicting on-reservation and off-reservation interests in a natural resource. The Court found that the Secretary's attempted "accommodation" of the conflicting demands of the Tribe and off-reservation district was insufficient even though the Department of the Interior was contractually obligated to supply water to the irrigation district. The Court reasoned that the Secretary's accommodation "fail[ed] to demonstrate an adequate recognition of his fiduciary duty to the Tribe" and that the trust responsibility obligated him to condition the diversion so that the water remaining for the reservation would be maximized. Id. at 256-257.

In Nance, the Crow Tribe and other petitioners challenged the Environmental Protection Agency's approval of the Northern Cheyenne Tribe's redesignation of air quality on its Reservation from Class II to the Class I standard.

Petitioners claimed that the EPA's activity in approving the redesignation for off-reservation land violated the trust responsibility owed to the Crow Tribe of Indians whose reservation is situated adjacent to and west of the Northern Cheyenne's reservation. Petitioners were concerned that the more stringent Class I standards would interfere with development, such as coal mining, on the Crow Reservation. The Ninth Circuit recognized that, even though only Northern Cheyenne lands were redesignated, federal approval of that action impacted the Crow Reservation and, consequently, the EPA was required to proceed in a trustee capacity vis-a-vis the Crow Tribe. 645 F.2d at 711. The Court concluded, however, that the EPA had fulfilled its fiduciary obligation, and the EPA's approval of the redesignation was affirmed. Id. at 711-12. Thus, both Pyramid Lake and Nance stand for the proposition that a federal agency's trust obligation to a tribe extends to actions it takes off a reservation which uniquely impact tribal members or property on a reservation.

In spite of the well-established relationship between the government and the Northern Cheyenne Tribe, the Department argues that there is no specific trust obligation that requires the Secretary to consider impacts of the coal lease sale on the Tribe. Citing United States v. Mitchell, 445 U.S. 535 (1980), the Department contends that a particular responsibility must be established by "special" statutory or treaty language. In Mitchell, a group of individual allottees of land within an Indian reservation sought money damages from the Secretary of the Interior for the alleged

mismanagement of timber property on allotted lands. The allottees asserted that they were entitled to damages because this alleged misconduct was a breach of the fiduciary duty owed to them by the Secretary as trustee of the allotted lands. Citing the language and legislative history of the General Allotment Act, the Court concluded that the Act created only a limited trust relationship between the United States and the allottees and that the Secretary had no fiduciary responsibility to manage timber resources.

The Department also relies on North Slope Borough v. Andrus, 642 F.2d 589 (D.C. Cir. 1980). In North Slope Borough, plaintiffs, representatives of native Alaskans and environmental organizations, brought suit to enjoin the Secretary from selling oil and gas leases off the north coast of Alaska. Among other things, plaintiffs allege that the Secretary's action violated a trust responsibility to the Alaskan natives. Citing Mitchell, the District of Columbia Circuit concluded that none of the federal statutes before it, including the Endangered Species Act, NEPA, Outer Continental Shelf Land Act and others, specifically provided for a federal trust responsibility.

Neither Mitchell nor North Slope Borough, however, control the instant case. In Mitchell Congress had acted pursuant to its plenary power over Indian tribes and had defined the extent of the trust responsibility owed to tribes under the Allotment Act. The Department has not identified any comparable congressional action limiting the government's trust responsibility to the Northern Cheyenne Tribe. In

North Slope Borough, the native Alaskans had no treaty relationship with the United States, no constitution approved by the Secretary, and there was no statutory or administrative recognition of a trust responsibility owed to them. Further, in sharp contrast to the present case, the Court found that the Secretary had given "purposeful attention" to the special needs of the native Alaskans and had identified and extensively considered the impacts of the lease sale on the native community. North Slope Borough, 642 F.2d at 612. Finally, in both North Slope Borough and Mitchell, the Courts "left open the questions of whether, on remand, other statutes might support the assertion of a trust responsibility, or whether a 'special relationship' between the United States and the Indian tribes could support that claim." North Slope Borough, 642 F.2d at 611 n. 148; see also, Mitchell, 445 U.S. at 546 n. 7.

The Secretary downplays his responsibilities to the Tribe by arguing that the decision to hold the lease sale was taken in the "national interest." He correctly points out that his duties and responsibilities extend to all United States citizens, and he takes the position that federal coal development is vital to the nation's energy future. The Secretary's conflicting responsibilities and federal actions taken in the "national interest," however, do not relieve him of his trust obligations. See Navajo Tribe of Indians v. United States, 364 F.2d 320, 323-24 (Ct. Cl. 1966). To the contrary, identifying and fulfilling the trust responsibility is even more important in situations such as the present case

where an agency's conflicting goals and responsibilities combined with political pressure asserted by non-Indians can lead federal agencies to compromise or ignore Indian rights. See Cohen at 227-28.

The Court concludes that the special relationship historically existing between the United States and the Northern Cheyenne Tribe obligated the Secretary to consider carefully the potential impacts to the Tribe resulting from the lease sale of federal coal tracts lying adjacent to or near the Northern Cheyenne Reservation. Ignoring the special needs of the Tribe and treating the Northern Cheyenne like merely citizens of the affected area and reservation land like any other real estate in the decisional process leading to the sale of the Montana tracts violated this trust responsibility. Once a trust relationship is established, the Secretary is obligated, at the very least, to investigate and consider the impacts of his action upon a potentially affected Indian tribe. If the result of this analysis forecasts deleterious impacts, the Secretary must consider and implement measures to mitigate these impacts if possible. To conclude that the Secretary's obligations are any less than this would be to render the trust responsibility a pro forma concept absolutely lacking in substance.

D. The Department's Defenses

The Department raises a number of defenses in this action which apply to one or more of the grounds upon which the Tribe bases its lawsuit. These defenses are addressed individually in the following sections.

1. Participation In The Administrative Process.

The Department argues that the Northern Cheyenne Indian Tribe is guilty of unclean hands because it failed to participate in the process leading to the Secretary's decision to hold the coal lease sale. The Department emphasizes the Tribe's failure to comment on the draft EIS during the public comment period. Relying heavily on Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Counsel, Inc., 435 U.S. 519 (1978), the Department claims that those who challenge an agency's action must participate in the administrative process.

There is considerable dispute between the parties as to how much the Tribe actually participated in the process. Both sides supplied the Court with conflicting chronologies each purporting to document the extent of the Tribe's participation and the degree to which the Department solicited Tribal participation. The extent of participation, however, does not appear to be material to this case. Even if the Department's position that the Tribe failed to participate in the process is assumed, the defense fails as a matter of law to relieve the Department of its obligations under NEPA, the FCLAA, and the trust responsibility. The Court need not ferret through the administrative record to determine which party's chronology of Tribal participation rings true.

It was the Department's responsibility in this case to comply with NEPA in the first instance. NEPA "'places upon an agency the obligation to consider every significant

aspect of the environmental impact of a proposed action' ... [and] it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process." Baltimore Gas & Electric v. National Resources Defense Council, 462 U.S. 87, 97 (1983) (quoting Vermont Yankee, 435 U.S. at 553).

Vermont Yankee provides some guidelines to determine when participation by a party who later challenges the agency's action on NEPA grounds is decisive to the outcome of the case. In Vermont Yankee environmental groups challenged, among other things, the failure of the Federal Power Commission to consider a conservation alternative in an EIS formula to aid in deciding whether or not to license a nuclear power plant. The Court carefully set forth its reasons for its finding that at the time the Commission's decision was made, energy conservation was given little serious thought and was not generally recognized as an alternative in energy-related decisions. Then, in addressing the necessity of participation, the Court concluded that, even though agencies have the obligation to comply with NEPA,

> it is still incumbent upon intervenors who wish to participate to structure their participation so that it is meaningful, so that it alerts the agency to the intervenors' position and contentions. This is especially true when the intervenors are requesting the agency to embark upon an exploration of uncharted territory, as was the question of energy conservation in the late 1960's and early 1970's.

43 S. at 553.

Likewise, in Seacoast Anti-pollution League v. Nuclear Regulatory Commission, 598 F.2d 1221 (1st Cir. 1979), the Court in rejecting petitioners' contentions that the

agency should have considered certain alternative sites for the construction of the nuclear facility stated that:

> The agency bears the primary responsibility to investigate serious alternatives, but reviewing courts, when weighing objections based on an alleged failure to study alternatives, properly may consider the extent and sincerity of the opponents' participation.

Id. at 1231. The Court proceeded to find that the alternatives presented by petitioners were remote, speculative, and would not significantly affect the project under consideration. Id. at 1233.

Even though Vermont Yankee and Seacoast concerned an agency's duty to formulate and consider alternatives rather than, as in this case, the duty to consider impacts of alternatives already formulated, the two cases do provide standards to gauge the necessity of participation. Participation in the administrative process by a party challenging the EIS is decisive only when the alternative pressed upon the agency is remote, speculative, or obscure. That is not the case here. The geographic proximity of the lease tracts to the Northern Cheyenne Reservation alone implied the need to at least investigate impacts on the Reservation. As set forth earlier, the Department knew from studies conducted in the preparation of the Coal Management Program that development of federal coal near reservations may especially burden Indian tribes because of their unique cultural, social and ecomonic circumstances. Finally, the Department studied the impacts of development on several off-reservation communities without requiring that those communities participate in the administrative process. Thus, the participation of the

Northern Cheyenne Tribe was not necessary because the need to investigate impacts on the Tribe and the Reservation would have been readily apparent if the Department had diligently investigated the impacts of its alternatives in accordance with NEPA's mandate.

There is even less of an argument supporting a participation requirement under the FCLAA. The FCLAA imposes upon the Secretary an affirmative duty to "consider effects which mining of the proposed lease might have on an impacted community or area . . . ." 30 U.S.C. § 201(a)(3)(C). This duty is mandatory and is not, at least by the statutory language, contingent upon public participation.

Finally, to impose a strict requirement that the Tribe demonstrate its participation in the administrative process or have its claims foreclosed is inconsonant with the special relationship between the Tribe and the United States. Much like the relationship between a guardian and ward, the trust responsibility is predicated on an assumption that for various reasons a tribe may be unable to assert or protect its rights and interests. Once established, the trust responsibility insures that, unless Congress deems otherwise, the United States will protect the interests of the Tribe to some degree. To impose a requirement that the Tribe participate or lose its claims when it is dealing with an agency of the Department of the Interior, the very Department to which it looks primarily for protection, is repugnant to the special relationship's purpose.

2. The "No Impact" Defense

The Department's "no impact" defense is summarized in a paragraph in one of its briefs:

> The Northern Cheyenne complain that while services, housing, government budgets, population increases, land use and social organizations were analyzed for other areas--no similar analysis was done for the Reservation or its towns. The explanation is uncomplicated--analysis indicates that the Tribe and Reservation will suffer no such impacts.

Federal Defendants' Memorandum in Support of Motion for Summary Judgment at 64. The Department argues that analysis conducted prior to the time the EIS was prepared led it to determine that the Reservation would not experience population increases as the result of coal development and therefore would suffer no significant effect on the quality of the human environment from the impacts associated with population increases. The Tribe contends that defendants' no-impact theory arises not from analysis, but is instead a post hoc rationalization by the Department's counsel made in an effort to justify a defective EIS and to explain the Department's failure to consider impacts on the Tribe. The record supports the Tribe's contention.

The record lacks evidence that the no impact theory was even contemplated by the preparers of the tract profiles and EIS or by the Secretary in his decision to lease coal. It appears that this theory arose from documents, specifically an EIS prepared by the state for the proposed Montco Mine, which were not considered by the Secretary. In determining whether or not the Secretary's actions are arbitrary, capricious, an abuse of discretion, or contrary to

law, this Court is limited to the administrative record. The Montco EIS is not properly part of the administrative record because it was neither indirectly nor directly considered by the Secretary at the time the decision to hold the lease sale was rendered. At best the no impact theory is an attempt to rationalize the failure of the Agency in the EIS and other decisional documents to consider the impacts of coal development on the Tribe. A court cannot affirm an agency action by accepting post hoc rationalizations by counsel that are not grounded in the administrative record. See Securities and Exchange Commission v. Chenery Corp., 332 U.S. 194, 196 (1947); Burlington Truck Lines v. United States, 371 U.S. 156, 168-69 (1962). This fundamental rule of administrative law also applies to NEPA cases. See Natural Resources Defense Council v. Morton, 458 F.2d 827, 836 (D.C. Cir. 1972). Even if there were some hint in the administrative record of the no impact theory, the failure to incorporate that theory in the EIS is by itself inadequate. See Grazing Fields Farm v. Goldschmidt, 626 F.2d 1068, 1072 (1st Cir. 1980).

The no impact theory is not supported by the record and is inconsistent with other legal theories urged upon the Court by the Department. The Department has asked the Court to accept its statement that it made a conscious decision to treat the Tribe like any other group of citizens and Tribal land like any other real estate in the affected area. Yet, if that statement is true, then it appears, contrary to the no-impact theory, that the EIS contemplates substantial population increases on the Reservation under the

various alternatives that are proportionate to the increases forecast for Big Horn and Rosebud Counties. See, e.g., EIS at 80.

Moreover, there is no analytical support in the administrative record or the EIS for the conclusion that the Reservation will be immune from population increases. Counsel for the Department point to a tribal program to purchase fee patent and allotted lands within the Reservation boundaries and thereby reacquire land for the Tribe as evidence that the Reservation will not incur population increases. Even assuming that the Tribe has the financial wherewithal to make such purchases in light of the increased housing demand projected for the area adjacent to the mines and the probability that real estate prices will inflate, nowhere in the record is there any evidence that the Department considered or even knew of the land acquisition program.

Even if the Reservation were immune from population increases, it is arbitrary and unreasonable for the Department to assume, without the support of carefully documented analysis, that there would be no socioeconomic or cultural impacts on the Northern Cheyenne Tribe. It is unlikely that socioeconomic impacts are simply a function of increased population on the Reservation or that the Reservation can remain socially and economically isolated in the face of extensive coal development adjacent to the Reservation. Regardless of the actual residence of incoming workers and service-related people, their demands for services will likely impact a more extended region to some degree. Analysis

is warranted to define these potential impacts and to propose appropriate mitigation measures.

3. Continuing Control Over Coal Mining Development.

The Department argues that any shortcomings in the Powder River region EIS can be adjusted for later in the coal development process because the Department maintains continuing control over the project as it must approve detailed mining plans before actual mining can take place. This argument is unpersuasive.

In County of Suffolk v. Secretary of the Interior, 562 F.2d 1368 (2d Cir. 1977), cert. denied 434 U.S. 1064 (1978), the Second Circuit set forth useful criteria to determine when subject matter may be deferred to a later EIS in a multistage project:

> [T]he extent to which treatment of a subject in an EIS for a multistage project may be deferred, depends on two factors: (1) whether obtaining more detailed useful information on the [subject] is "meaningfully possible" at the time when the EIS for an earlier stage is prepared, and (2) how important it is to have the additional information at an earlier stage in determining whether or not to proceed with the project.

Id. at 1378 (citations omitted).

There is nothing in the administrative record to indicate that gathering data concerning impacts, socioeconomic or otherwise, on the Northern Cheyenne Tribe was not "meaningfully possible" at the time the sale EIS was prepared or that the Department consciously deferred this analysis to EISs arising at a later stage of coal development. Further, the FCLAA mandates that the Secretary consider impacts on

communities prior to the issuance of any lease. 30 U.S.C. § 201(a)(3)(C).

In recent cases courts have recognized the importance of assessing impacts as early in multistage development as possible. In this case readily available options for mitigation of the effects of coal development on the Northern Cheyenne Tribe -- e.g. lease stipulations, distancing tracts from the Reservation, and spreading the lease sales over a longer time period -- would be foreclosed if not investigated in the earlier sale EIS. Thus, the decision to sell the tracts is a critical stage in coal development with respect to mitigation measures. Cf. State of California v. Block, 690 F.2d 753, 762-63 (9th Cir. 1982) ("[T]he promise of site-specific EIS's in the future is meaningless if later analysis cannot consider wilderness preservation as an alternative to development. The 'critical decision' to commit these areas for non-wilderness uses, . . . is 'irreversible and irretrievable.'); see also Conner v. Burford, CV-82-42-BU, slip op. at 5-6 (D. Mont. 1985).

Contrary to its position before this Court, the Department has also recognized the need for early analysis of socioeconomic impacts:

> What the Department can do is influence, and in some cases determine, the location, timing, and nature of development. Instead of providing a response after the commitment to development is made, the Department's authority must focus on the decisions that surround the initial decision to proceed.

Final Environmental Statement, Federal Coal Management Program at 6-10. Thus, the Department's "continuing control

over mining developments" cannot excuse its failure to consider impacts on the Tribe in the lease sale EIS.

4. Lessees as Indispensable Parties.

The Department claims that the failure of the Tribe to join the lessees in this action bars the Court from setting aside the leases issued by the Department. The Department asserts that the lessees are indispensable parties to this litigation and that their rights in the leases cannot be affected without having them before the Court. In the factual circumstances of this case, this claim is without merit.

The Tribe's complaint was filed and served one week prior to the Powder River sale. The Tribe's counsel wrote to the BLM Wyoming State Director on April 23, 1982, and advised him that the Tribe's suit had a lis pendens effect on the coal sale. An April 27 Department of the Interior news release issued from the Secretary's office reported the District of Columbia Court's holding "that prospective bidders would take their leases subject to the possible outcome of this litigation."

When the sale was held on April 28, 1982, a Department representative orally notified bidders prior to bidding that the Tribe had filed suit and that this litigation was a lis pendens on the sale. Subsequent to the sale, in formal decisions to issue leases to the successful bidders, the Department conditioned the leases by recognizing that:

> The issuance of coal leases resulting from the April 28, 1982, Powder River coal lease sale has

> been challenged in two lawsuits. . . . There is no current court order preventing issuance of the above leases. However, as the BLM Wyoming State Director announced at the beginning of the lease sale, the U.S. District Court for the District of Columbia stated on April 22, 1982, when denying a motion for a temporary restraining order in the Northern Cheyenne case:
>
> "Furthermore, as the Court mentioned a moment ago, the doctrine of lis pendens would be applicable to prospective bidders and they would take the lease, if they were successful, subject to the possible outcome of this litigation."

Thus, the successful bidders took the coal leases subject to the pending litigation. It is well recognized that

> [W]hoever purchases or acquires an interest in property that is involved in pending litigation stands in the same position his vendor, is charged with notice of the rights of his vendor's antagonist, and takes the property subject to whatever valid judgment may be rendered in the litigation. In other words, a person who deals with property while it is in litigation does so at his peril.

51 Am.Jur. 2d Lis Pendens § 1 (1970) (footnotes omitted). There was no requirement that the lessees be joined or that they be allowed by right to intervene in this litigation.

> [I]t is generally considered that the pendente lite purchaser's alienor, assuming that the alienor is a party, represents the purchaser's interests in the property in litigation, and that the mere fact that a person is a pendente lite purchaser of property in litigation does not, in itself, qualify him as a necessary party to that litigation.
>
> It has been observed that in the absence of an appropriate statute declaring otherwise, a pendente lite purchaser of property involved in litigation has, as such, no settled right to intervene in that litigation, and that such a purchaser's status, as such, is not enough, standing alone, to require the court to grant the purchaser's application to intervene.

Id. at § 43 (footnotes omitted). See Mellen v. The Moline Malleable Ironworks, 131 U.S. 352 (1889); Conservation Law Foundation of New England v. Andrus, 623 F.2d 712 (1st Cir.

1979). Here the successful bidders and eventual lessees had notice of this litigation. They chose not to seek intervention. There is no basis in either fact or law for the Court to deny the Tribe the relief sought because of its failure to join the lessees in this litigation.

Additionally, the Tribe contends that its suit seeks to vindicate public rights under federal law and therefore falls within the public interest except to the general rule which necessitates joinder of the lessee when rights in a lease are being adjudicated. Because the Court finds that the sale was subject to a lis pendens, it need not reach the Tribe's contention.

E. Conclusion

The Tribe has shown that the Secretary had a duty, one created by three independent sources (NEPA, the FCLAA, and the trust responsibility), to investigate and consider the impacts including socioeconomic impacts that proposed federal coal development in close proximity to the Northern Cheyenne Reservation would have on the Northern Cheyenne Tribe and its lands. The exclusion of these impacts in the EIS and the Secretary's failure to consider these impacts in his decision is a clear breach of these duties. With respect to the NEPA violation, this case is not one that concerns a question of whether or not a topic that was included in the EIS was sufficiently discussed. Instead, the problem here arises from the fact that a significant segment of information necessary to the EIS was excluded and therefore not

considered by the Secretary in the course of making his decision to hold the lease sale.

Contrary to the government's contentions, this case does not merely reflect a difference of opinion regarding the policy of federal coal development and the Department's decision to proceed rapidly with this development. The Department has claimed that the Tribe has "'flyspecked' the extensive administrative record formulated by Interior to conjure up a few issues in an attempt to vindicate their policy preference." This Court is cognizant of the need to take caution that NEPA and other statutory schemes are not manipulated beyond Congress' intent in attempts by litigants to raise policy objections to proposed federal actions. See Metropolitan Edison, 460 U.S. at 777-78. Here, however, such a claim cannot be accepted because it would require the Court to overlook clear violations of law that were committed in the coal development process on the pretext that these flaws are merely "policy differences" that must be sorted out in the political process and not in the courts.

The Court notes in this context that the Northern Cheyenne Tribe has expressly stated that it does not object to federal coal development in the region; it objects only to development that is undertaken without due regard to potential impacts on the Tribe and Tribal land. The issues here are not whether coal leasing is desirable or whether leasing is necessary from a national energy standpoint. The issues are not matters of policy but are simply questions of whether or not the Defendants complied with the applicable federal

law during the leasing process. The Court concludes that they have not.

An appropriate order shall issue in accordance with this memorandum opinion.

Done and dated this 28th day of May, 1985.

James F. Battin
Chief Judge

FILED

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LOU ALEKSICH, JR. CLERK
By Marietta M. Rudio
Deputy Clerk

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
BILLINGS DIVISION

THE NORTHERN CHEYENNE TRIBE, Plaintiff, -vs- DONALD HODEL, Secretary of the Interior; THE UNITED STATES DEPARTMENT OF THE INTERIOR, Defendants. and WESTERN ENERGY COMPANY, a corporation; WESCO RESOURCES, INC.; and THERMAL ENERGY COMPANY, Intervenors and Defendants.	CV 82-116-BLG-JFB OPINION AND ORDER

Presently pending before the Court are motions by the federal defendants and the intervening defendants to alter or amend the judgment entered by the Court on May 28, 1985. For reasons stated below, the Court will amend its judgment.

FACTS AND CONTENTIONS

On May 28, 1985, the Court issued an opinion and order in the above-captioned case, holding that defendants violated the National Environmental Policy Act (NEPA), the Federal Coal Leasing Act Amendments of 1976, and the federal trust responsibility to the Northern Cheyenne Tribe when it issued coal leases on certain tracts of land in Montana without first considering the impact such coal leasing would have on plaintiff Indian Tribe. The Court voided all federal coal leases on tracts

situated in Montana which were issued as the result of the 1982 Powder River Coal Sale.

On October 8, 1985, the Court granted motions by three of the lessees affected by the lease recissions to intervene as defendants for the limited purposes of considering the relief granted and protecting their right of appeal. Those lessees, Wesco Resources, Inc., Thermal Energy Company and Western Energy Company, as well as the federal defendants, argue that voiding the Montana leases is an extreme remedy and not justified in light of the Court's failure to balance the equities involved before it granted relief. Plaintiff argues that the Court's declaration voiding the leases is the only appropriate remedy. It strongly resists any amendment of the judgment.

DISCUSSION

Fed.R.Civ.P. 59(e) provides that within ten days after entry of judgment, a motion to alter or amend the judgment may be filed. Such motion is an efficient mechanism to correct a judgment without implicating the appellate process. Clipper Express v. Rocky Mountain Motor Tariff Bureau, Inc., 690 F.2d 1240, 1249 (9th Cir. 1982), cert. denied, 459 U.S. 1227 (1983). It enables the Court to review the remedy granted. In this case, the issue of remedy was not thoroughly addressed by the parties in their motions for summary judgment. The Court now has before it a more complete picture of the relief available and the competing equities implicated by the various options. Thus, the motion to amend the judgment to reflect a more equitable remedy is well-taken.

Summary judgment was entered in favor of plaintiff and against defendants. The Court declared the Montana mineral leases issued at the 1982 Powder River coal sale void and ordered that defendants take action to rescind the leases. The defendants and intervenors seek to alter not the entry of summary judgment but rather the remedy of cancellation. With the exception of Western Energy, the defendants and intervenors request that the leases be suspended not rescinded. Western Energy, however, urges the Court to declare that, with regard to its leases, the environmental impact statement (EIS) prepared by the federal defendants was sufficient because Western Energy's mining operations create no additional impact on the Tribe.

In its May 1985 Memorandum Opinion, the Court stated, ". . . the problem here arises from the fact that a significant segment of information necessary to the EIS was excluded and therefore not considered by the Secretary in the course of making his decision to hold the lease sale." Pp. 42-43. The federal defendants did not comply with the applicable federal law during the leasing process, and they recognize that the Court is obligated to formulate a remedial decree which vindicates the purpose and policies of the applicable federal statutes. Federal Defendants' Memorandum in Support of Motion to Amend Judgment . . . ., p. 2. However, the federal defendants urge the Court to balance the relative hardship and harm to the parties and the public in determining the appropriate relief.

The Court has the power and discretion, after weighing the equities, to fashion a decree which addresses the needs of

this particular case. Voidance of the leases is an ultimate remedy which may not be necessary to preserve the intent of the federal statutes at issue. The Court has ruled that the EIS is insufficient. However, plaintiff has not shown that voidance is the only remedy which will protect its interests. The Tribe fails to identify significant harm that will befall it if the leases are stayed during the preparation of the EIS, after which time the federal defendants must evaluate the socioeconomic impacts of the lease sale and determine whether the leases must be cancelled or whether they will have no significant environmental impact. On the other hand, the lessees can show injury if the leases are cancelled.[1] They were the successful bidders at the sale and have expended money to acquire the leases. Although there is presently no great urgency for coal development, the leases are nonetheless valuable to the leaseholders. Thus, a remedy short of cancellation may suffice.

For instance, in Cady v. Morton, 527 F.2d 786 (9th Cir. 1975), the Ninth Circuit enjoined all future operations under coal mining leases approved by the BIA during the preparation of an adequate EIS covering an entire strip mining project. Following completion of the EIS, the Secretary of the Department of the Interior was required to consider approval of the leases and, in so doing, ignore investments or commitments made under the leases. In the face of an inadequate EIS, the Ninth Circuit

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[1]The Court, however, takes notice that the leases were taken subject to the outcome of this litigation. The lessees were remiss in assuming plaintiff would not prevail on the merits and in failing to intervene at a more meaningful time.

found it sufficient to enjoin the mining operations and direct the Secretary to reconsider its position. Similarly, in the case at bar, all mining operations could be enjoined while the Secretary prepares an adequate analysis of the socioeconomic impacts of mining on the Tribe. The Secretary would then be directed to complete an adequate EIS and reconsider its decision to hold the Montana portion of the 1982 Powder River coal sale.

Western Energy argues that the present EIS is sufficient with regard to its leases because its leases are maintenance tracts which would create no additional impacts on the Tribe. The Court is not, however, in a position to make such a declaration. An analysis of the socioeconomic impacts of the coal sale on the Tribe was excluded from the EIS and not considered by the Secretary. A decision whether the maintenance tracts create any additional impacts on the Tribe must be reached by agency experts. The Court's function is simply to review that decision for arbitrariness. Furthermore, the Court made clear in its order allowing intervention that the issue of the adequacy of the EIS is not open for reconsideration. The Secretary breached his duty to investigate and consider the impacts that coal development would have on the Tribe and its land. He must now make such an inquiry. It is not for the Court to decide what those impacts may or may not be.

Noneless, in balancing the possible irreparable injury to the Tribe against the hardship of Western Energy, the Court does not believe that injunctive relief is appropriate during the pendency of the Secretary's analysis. Western Energy is

presently mining on approved mine plans which border the maintenance tracts. Thus, impacts, if any, are presently being felt by the Tribe to some extent. The Tribe has stated that it does not oppose mining. Significantly, if the leases on the maintenance tracts are stayed, the federal coal involved will be permanently bypassed, causing possible detriment not only to Western Energy but also to the Tribe and the public. Should the Secretary find that mining on the maintenance tracts causes significant socioeconomic impacts, the mining could be halted immediately or the impacts mitigated. "Although failure to comply with NEPA will ordinarily call for an injunction halting the challenged action until the Act's requirements are met, in unusual circumstances an application of traditional equitable principles may justify denial or limitation of injunctive relief." Cady, 527 F.2d at 798 n. 12. Furthermore, NEPA "allows for some flexibility in remedy because Congress has mandated compliance with NEPA procedures 'to the fullest extent possible.'" Forelaws on Board v. Johnson, 743 F.2d 677, 686 (9th Cir. 1984). Thus, a stay is not appropriate for the maintenance tracts. Accordingly,

IT IS ORDERED that the federal defendants' and intervening defendants' motion to alter or amend the judgment rendered on May 28, 1985, is granted. The portion of the Court's order of May 28, 1985, declaring the Montana leases void and ordering the Secretary to rescind them is vacated. The relief granted with respect to all leases is amended as follows:

1. All coal operations except those pertaining to leases M54711, M54712 and M54713 are enjoined pending the Secretary's expeditious preparation of a supplemental EIS addressing the cultural, social and economic impact of issuing coal leases near the Northern Cheyenne Indian Reservation. The Secretary shall take the necessary action to suspend the leases pursuant to 30 U.S.C. § 209 and to relieve the lessees of their obligations thereunder, including the obligation to make deferred bonus payments. No bond in an amount equal to the remaining bonus amount owed will be required. Operations on M54711, M54712 and M54713 may go forward. Should the Secretary find, however, that mining on the maintenance tracts causes significant socioeconomic impacts, the mining shall immediately be halted.

2. Upon completion of the supplemental EIS, the Secretary shall reconsider whether all leases, including M54711, M54712 and M54713, should have been issued and whether additional mitigation measures should be imposed. If the Secretary concludes that the leases should not have been issued, he shall rescind them and halt all operations. If the Secretary concludes that the leases should be approved, he shall issue a decision supporting his conclusion and order reinstatement of the leases.

The Clerk is directed forthwith to notify counsel for the respective parties of the making of this order.

Done and dated this 6th day of October, 1986.

Jeremy F. Battin
Chief Judge

APPENDIX B
TRACT PROFILE PACKAGE

PURPOSE AND NEED ALTERNATIVES, Including the Proposed Action

Purpose and Need

This Supplemental Tract Profile Package (TPP) responds to the October 6, 1986, Billings District Court order requiring social, economic, and cultural analyses of the 11 Montana tracts contained in the Powder River I federal coal activity planning process. A history of that process and of the lawsuit leading to this Supplement is contained in Chapter 1, Section 1.2. While the Regional Supplement assesses impacts from the three multi-tract federal coal leasing alternatives (2A, 2B, and 4), Section II of this Supplemental TPP focuses on the impacts to the Northern Cheyenne and Crow Tribes from each of the 11 individual tracts.

Alternatives, Including the Proposed Action

The 11 tracts that are analyzed in this Supplemental TPP fall into two major categories: (a) six mine expansion/extension tracts, and (b) five new mine tracts (Table B-1). The 11 original Tract Profiles prepared as part of the Powder River I EIS considered the "No Action" alternative of not leasing any additional federal coal and the "Proposed Action" alternative of leasing each of the federal tracts. These same alternatives are analyzed in Section 2 of this Supplemental TPP.

The tract-specific information presented in this TPP is the most current and accurate available at the time this document was released (1988). In some cases it updates information presented in the original 1980 Powder River I Tract Profiles. This type of information can be expected to change over time, as it has in the past, as more current information becomes available (e.g., start dates, employment levels, etc.).

IMPACT ANALYSIS

B. Introduction

This section discusses the economic, social, and cultural impacts resulting from development of each of the 11 Powder River I federal coal tracts in Montana.

Chapter 3 of the Supplement, "Affected Environment," discusses the existing economic, social, and cultural conditions on the Northern Cheyenne and Crow Reservations.

The impacts to the Northern Cheyenne and Crow Reservations are measured against two baselines. See Chapter 1,

TABLE B-1
MONTANA TRACT RANKING — POWDER RIVER I

Tract	Socioeconomic Ranking[1]	Overall Ranking[1]	Offered for Sale	Bid	
				Received	Accepted
Colstrip A & B	Medium-high	High	Yes	Yes	Yes
Colstrip C	Medium-high	High	Yes	Yes	Yes
Colstrip D	Medium-high	High	Yes	Yes	Yes
Spring Creek	High	High	Yes	No	
North Decker	Medium	High	Yes	No	
West Decker	Medium	High	Yes	Yes	Yes
Cook Mountain	Low	Medium	Yes	Yes	Yes
Coal Creek	Low-medium	Medium	Yes	Yes	Yes[2]
Decker-Birney (Ashland)	Low	Medium	No		
Northwest Otter Creek	Low	Medium	No		
Southwest Otter Creek	Low	Medium	No		

[1] As recommended by the Powder River RCT on October 2, 1981. Rankings indicate "desirability of leasing."
[2] The Coal Creek lease has not been issued.

Source: BLM, MSO Division of Mineral Resources, 1987.

Section 1.4 for a further explanation of these baseline alternatives. The High Baseline Alternative which includes current and proposed mines/projects in the Montana portion of the Powder River Region can be found in Chapter 4, Section 4.1N for the Northern Cheyenne Reservation and Chapter 4, Section 4.1C for the Crow Reservation. The Low Baseline Alternative includes only coal development which currently exists in the region. The discussion of the Low Baseline is found in Chapter 4A, Section 4A.1.N for the Northern Cheyenne Reservation and Chapter 4A, Section 4A.1.C for the Crow Reservation.

The impact analysis in this Appendix is contained in 11 Tract Impact Reports (TIRs). The six TIRs for the expansion/extension tracts are presented in the following order in Sections 2.1 through 2.6 of this Appendix:

TIR No.	Tract Name	Tract Type
1	Colstrip A&B	Expansion/Extension Tract
2	Colstrip C	Expansion/Extension Tract
3	Colstrip D	Expansion/Extension Tract
4	North Decker	Expansion/Extension Tract
5	Spring Creek	Expansion/Extension Tract
6	West Decker	Expansion/Extension Tract

The five TIRs for the new mine tracts are presented in the following order in Sections 2.7 through 2.11 of this Appendix:

7	Coal Creek	New Mine
8	Cook Mountain	New Mine
9	Decker-Birney (Ashland)	New Mine
10	Northwest Otter Creek	New Mine
11	Southwest Otter Creek	New Mine

EXPANSION/EXTENSION TRACTS

B.1 TIR No. 1 — Colstrip A and B

Introduction

The Colstrip A and B tract is located in Rosebud County, Montana (Map B-1). It lies approximately 11 miles north of the Northern Cheyenne Reservation. The tract contains recoverable federal coal from the Rosebud coal bed.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Colstrip A and B tract. Table B-2 provides additional information on this tract.

The tract is a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal will be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached.

TABLE B-2
SPECIFIC TRACT CHARACTERISTICS
Colstrip A & B

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	1,632
State	280
Private	3,613
Total	5,525
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	21
State	2
Private	56
Total	79
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	30
Average Overburden (feet)	80
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	23.1
Percent Ash	8.4
Percent Sulfur	1.0
BTUs per Pound	8,920
Mine Life (Years)	20

No Action Alternative

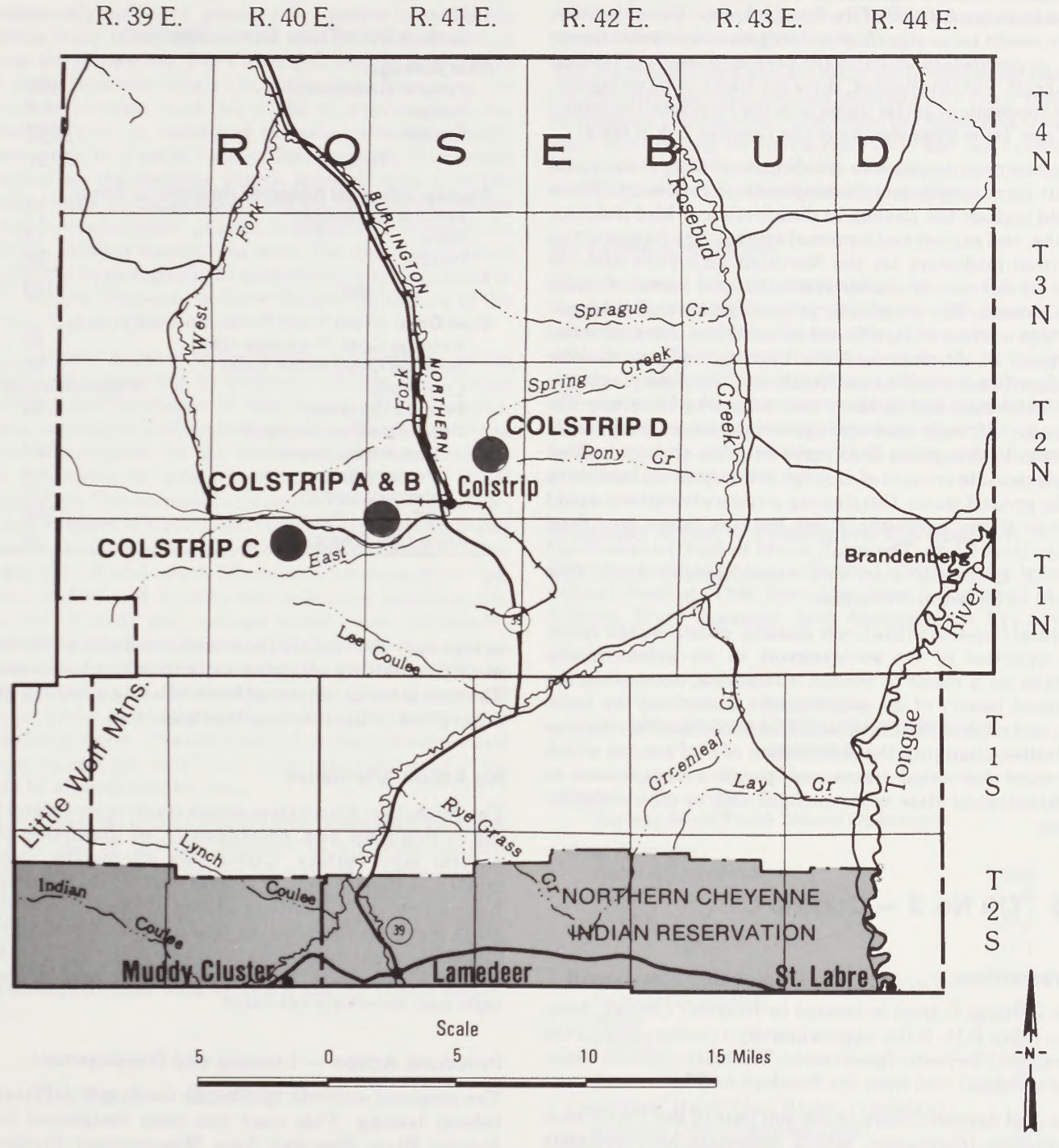
The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 21 million tons of federal coal would be foregone. Approximately 26.3 million dollars of federal mineral royalties would be foregone, as would an estimated 24.8 million dollars in state severance taxes (assuming 12½ percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

Proposed Action — Leasing and Development

The proposed action is to offer the Colstrip A and B coal tract for federal leasing. This tract has been designated in the Powder River Resource Area Management Framework Plan (MFP) Update Report of July 1979 as acceptable for further consideration for leasing. The land use planning process included the application of unsuitability criteria, multiple use conflict evaluation, and surface owner consultation. Following land use planning, the BLM requested expressions of interest which, along with other information, guided the U.S. Geological Service in delineating this tract.

This tract has been designated as a mine expansion/extension tract in the area of the existing Rosebud mine. As the designation suggests, this type of federal tract is located within the mining area of an existing mine and contains only sufficient recoverable reserves to enable the existing mine to expand annual coal production and/or extend the mine's life. The Colstrip A & B tract is assumed

Map B-1



Powder River I Expansion/Extension Tracts —Northern Group—

to add to the Rosebud mine's life, rather than to increase its annual production level. The majority of coal from Colstrip A and B is committed to fueling various midwestern utilities. This coal would be mined as the dragline moves through areas A and B of the Rosebud mine. Consequently, there would be no significant change in employment, payroll, or population levels in the area as a result of leasing this tract. For this reason, there are likely to be no significant economic or social impacts to the Northern Cheyenne or Crow Tribe from leasing of the Colstrip A & B tract.

Basic cultural impacts to the Northern Cheyenne would result from continuing development of this tract. These would include the change in distribution of bird (falcons, hawks, and eagles) and mammal species. The former act as spiritual mediators for the Northern Cheyenne and are used as sources of cancer medicine and items of ritual significance. The mammals, primarily deer and antelope, are also sources of significant ritual items. Air and water pollution would continue to limit access to plants of cultural significance and cause Northern Cheyenne plant specialists to find and develop new collecting localities. Destruction of wells and springs would cause irreparable damage to the spirits associated with the springs and an indeterminate amount of damage to the spiritual attributes of the ground water. Continuing terrain alterations would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The result would be that the area would become spiritually inert and cosmologically dead. This would be an irretrievable loss.

Cultural impacts to the Crow include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations, decreasing the physical beauty of the environment, disturbing the isolation and natural setting of localities necessary for religious activities, changing the distribution of bird species which are used for ritual items and possible disturbance to archaeological sites with spiritual and/or ethnic significance.

B.2 TIR No. 2 — Colstrip C

Introduction

The Colstrip C tract is located in Rosebud County, Montana (Map B-1). It lies approximately 11 miles north of the Northern Cheyenne Reservation. The tract contains recoverable federal coal from the Rosebud coal bed.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Colstrip C tract. Table B-3 provides additional information on this tract.

The tract is a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal will be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal is being consumed in an existing electrical generation plant in the Colstrip, Montana, area.

TABLE B-3
SPECIFIC TRACT CHARACTERISTICS
Colstrip C

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	893
State	640
Private	3,604
Total	5,137
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	21
State	14
Private	85
Total	120
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	30
Average Overburden (feet)	80
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	23.1
Percent Ash	8.5
Percent Sulfur	0.7
BTUs per Pound	8,950
Mine Life (Years)	38

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 21 million tons of federal coal would be foregone. Approximately 26.3 million dollars of federal mineral royalties would be foregone, as would an estimated 24.8 million dollars in state severance taxes (assuming 12½ percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

Proposed Action — Leasing and Development

The proposed action is to offer the Colstrip C coal tract for federal leasing. This tract has been designated in the Powder River Resource Area Management Framework Plan (MFP) Update Report of July 1979 as acceptable for further consideration for leasing. The land use planning process included the application of unsuitability criteria, multiple use conflict evaluation, and surface owner consultation. Following land use planning, the BLM requested expressions of interest which, along with other information, guided the U.S. Geological Service in delineating this tract.

This tract has been designated as a mine expansion/extension tract in the area of the existing Rosebud mine. As the designation suggests, this type of federal tract is located within the mining area of an existing mine and contains only sufficient, recoverable reserves to enable the existing mine to expand annual coal production and/or extend the mine's life. The Colstrip C tract is assumed to add to the Rosebud mine's life, rather than to increase its annual production level. All of the production from the Colstrip C tract is committed to fueling Colstrip electric power generation units 3 and 4. Coal from this tract would be mined as the dragline moves through Area C of the Rosebud mine. Consequently, there would be no significant change in employment, payroll, or population levels in the area as a result of leasing this tract. For this reason, there are likely to be no significant economic or social impacts to the Northern Cheyenne or Crow Tribe from leasing of the Colstrip C tract.

Basic cultural impacts to the Northern Cheyenne would result from continuing development of this tract. These would include the change in distribution of bird (falcons, hawks, and eagles) and mammal species. The former act as spiritual mediators for the Northern Cheyenne and are used as sources of cancer medicine and items of ritual significance. The mammals, primarily deer and antelope, are also sources of significant ritual items. Air and water pollution would continue to limit access to plants of cultural significant and cause Northern Cheyenne plant specialists to find and develop new collecting localities. Destruction of wells and springs would cause irreparable damage to the spirits associated with the springs and an indeterminate amount of damage to the spiritual attributes of the ground water. Continuing terrain alterations would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The result would be that the area would become spiritually inert and cosmologically dead. This would be an irretrievable loss.

Cultural impacts to the Crow include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations, decreasing the physical beauty of the environment, disturbing the isolation and natural setting of localities necessary for religious activities, changing the distribution of bird species which are used for ritual items and possible disturbance to archaeological sites with spiritual and/or ethnic significance.

B.3 TIR No. 3 — Colstrip D

Introduction

The Colstrip D tract is located in Rosebud County, Montana (Map B-1). It lies approximately 17 miles north of the Northern Cheyenne Reservation. The tract contains recoverable federal coal from the Rosebud coal bed.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Colstrip D tract. Table B-4 provides additional information on this tract.

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be consumed in an existing electrical generation plant within the Powder River Region.

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 42 million tons of federal coal would be foregone. Approximately 52.5 million dollars of federal mineral royalties would be foregone, as would an estimated 49.7 million dollars in state severance taxes (assuming 12½ percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

Proposed Action — Leasing and Development

The proposed action is to offer the Colstrip D coal tract for federal leasing. This tract has been designated in the Powder River Resource Area Management Framework

TABLE B-4
SPECIFIC TRACT CHARACTERISTICS
Colstrip D

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	2,250
State	0
Private	2,811
Total	5,061
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	42
State	0
Private	54
Total	96
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	28
Average Overburden (feet)	80
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	23.8
Percent Ash	9.1
Percent Sulfur	0.8
BTUs per Pound	8,680
Mine Life (Years)	30

Plan (MFP) Update Report of July 1979 as acceptable for further consideration for leasing. The land use planning process included the application of unsuitability criteria, multiple use conflict evaluation, and surface owner consultation. Following land use planning, the BLM requested expressions of interest which, along with other information, guided the U.S. Geological Service in delineating this tract.

This tract has been designated as a mine expansion/extension tract in the area of the existing Rosebud mine. As the designation suggests, this type of federal tract is located within the mining area of an existing mine and contains only sufficient, recoverable reserves to enable the existing mine to expand annual coal production and/or extend the mine's life. The Colstrip D tract is assumed to add to the Rosebud mine's life, rather than to increase its annual production level. The vast majority of the coal in this tract is committed to fueling the existing Colstrip electric power generation units and the Billings Corette electric power plant. This coal would be mined as the Rosebud mine dragline moves through Area D of the Rosebud mine. Consequently, there would be no significant change in employment, payroll, or population levels in the area as a result of leasing this tract. For this reason, there are likely to be no significant economic or social impacts to the Northern Cheyenne or Crow Tribe from leasing of the Colstrip D tract.

Basic cultural impacts to the Northern Cheyenne would result from continuing development of this tract. These would include the change in distribution of bird (falcons, hawks, and eagles) and mammal species. The former act as spiritual mediators for the Northern Cheyenne and are used as sources of cancer medicine and items of ritual significance. The mammals, primarily deer and antelope, are also sources of significant ritual items. Air and water pollution would continue to limit access to plants of cultural significant and cause Northern Cheyenne plant specialists to find and develop new collecting localities. Destruction of wells and springs would cause irreparable damage to the spirits associated with the springs and an indeterminate amount of damage to the spiritual attributes of the ground water. Continuing terrain alterations would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The result would be that the area would become spiritually inert and cosmologically dead. This would be an irretrievable loss.

Cultural impacts to the Crow include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations, decreasing the physical beauty of the environment, disturbing the isolation and natural setting of localities necessary for religious activities, changing the distribution of bird species which are used for ritual items and possible disturbance to archaeological sites with spiritual and/or ethnic significance.

B.4 TIR No. 4 — North Decker

Introduction

The North Decker tract is located in Big Horn County, Montana. (Map B-2) It lies approximately 19 miles south of the Northern Cheyenne Reservation. The tract contains recoverable federal coal from the Anderson, Dietz-1, and Dietz-2 coal seams.

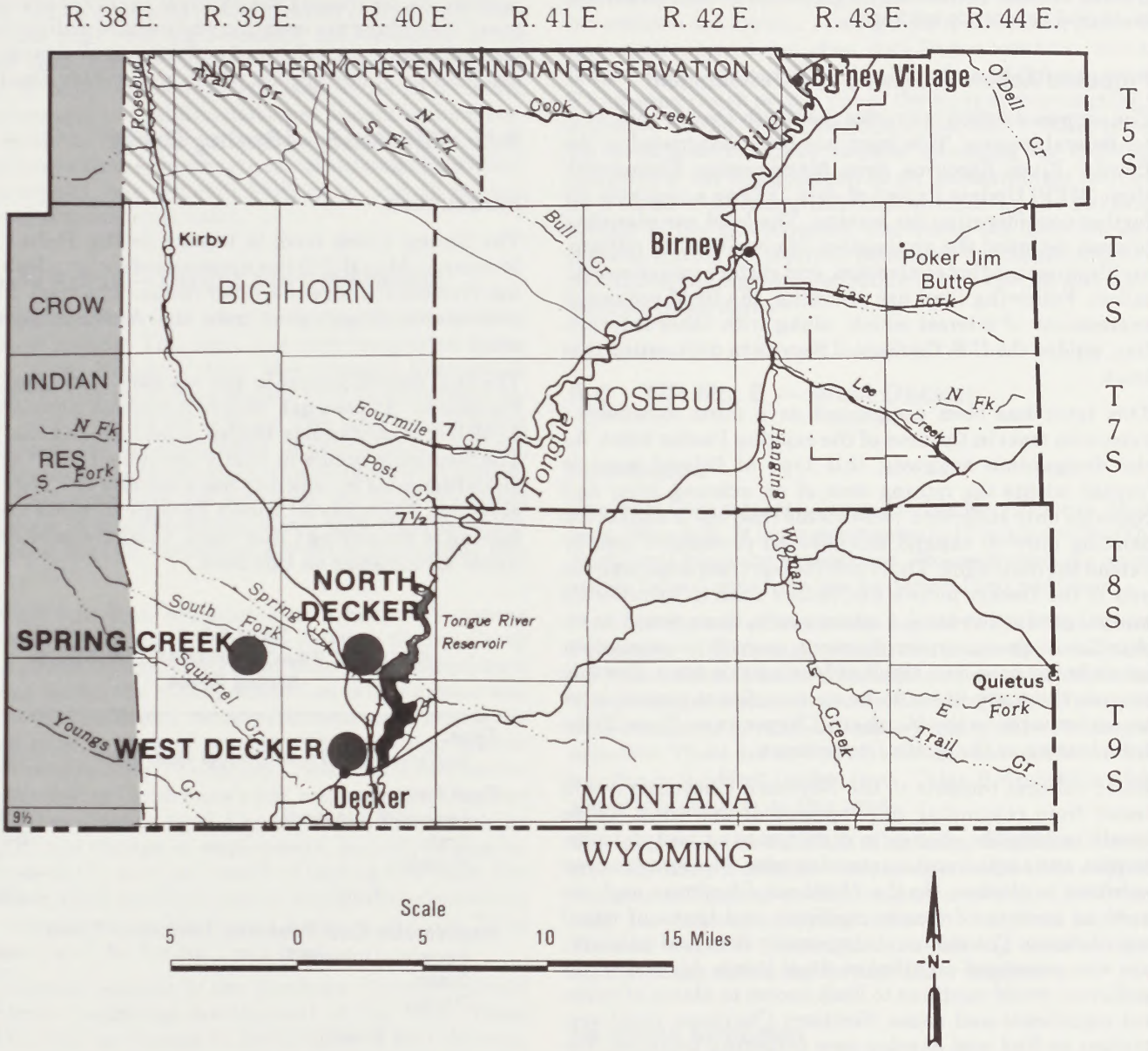
The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the North Decker tract. Table B-5 provides additional information on this tract.

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be consumed in an existing electrical generation plant within the Powder River Region.

TABLE B-5
SPECIFIC TRACT CHARACTERISTICS
North Decker

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	1,431
State	0
Private	0
Total	1,431
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	66
State	0
Private	0
Total	66
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	50
Average Overburden (feet)	175
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	23.6
Percent Ash	4.1
Percent Sulfur	0.4
BTUs per Pound	9,738
Mine Life (Years)	40

Map B-2



Powder River I Expansion/Extension Tracts —Southern Group—

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 66 million tons of federal coal would be foregone. Approximately 82.5 million dollars of federal mineral royalties would be foregone, as would an estimated 78.2 million dollars in state severance taxes (assuming 12½ percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

Proposed Action — Leasing and Development

The proposed action is to offer the North Decker coal tract for federal leasing. This tract has been designated in the Powder River Resource Area Management Framework Plan (MFP) Update Report of July 1979 as acceptable for further consideration for leasing. The land use planning process included the application of unsuitability criteria, multiple use conflict evaluation, and surface owner consultation. Following land use planning, the BLM requested expressions of interest which, along with other information, guided the U.S. Geological Service in delineating this tract.

This tract has been designated as a mine expansion/extension tract in the area of the existing Decker mine. As the designation suggests, this type of federal tract is located within the mining area of an existing mine and contains only sufficient, recoverable reserves to enable the existing mine to expand annual coal production and/or extend the mine's life. The North Decker tract is assumed to add to the Decker mine's life, rather than to increase its annual production level. Consequently, there would be no significant change in employment, payroll, or population levels in the area as a result of leasing this tract. For this reason, there are likely to be no significant economic or social impacts to the Northern Cheyenne or Crow Tribe from leasing of the North Decker tract.

Basic cultural impacts to the Northern Cheyenne would result from continuing development of this tract. These would include the change in distribution of bird (falcons, hawks, and eagles) and mammal species. The former act as spiritual mediators for the Northern Cheyenne and are used as sources of cancer medicine and items of ritual significance. The mammals, primarily deer and antelope, are also sources of significant ritual items. Air and water pollution would continue to limit access to plants of cultural significant and cause Northern Cheyenne plant specialists to find and develop new collecting localities. Destruction of wells and springs would cause irreparable damage to the spirits associated with the springs and an indeterminate amount of damage to the spiritual attributes of the ground water. Continuing terrain alterations would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The result would be that the area would become spiritually inert and cosmologically dead. This would be an irretrievable loss.

Impacts to the Crow would be caused by development of the North Decker tract which has the potential to damage archaeological sites with *baxpe* (sacred) attributes and/or ethnic significance. Site types of particular concern are burials, fasting sites (prehistoric, historic, and modern), rock art sites, Sun Dance localities, sweat lodges, offering sites, Medicine Wheels and tipi ring sites. The Spring Creek area is one of the most archaeologically sensitive for the Crow (Medicine Crow, 1987). Other cultural impacts to the Crow include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations, decreasing the physical beauty of the environment, disturbing the isolation and natural setting of localities necessary for religious activities and changing the distribution of bird species which are used for ritual items.

B.5 TIR No. 5 — Spring Creek

Introduction

The Spring Creek tract is located in Big Horn County, Montana. (Map B-2) It lies approximately 19 miles south of the Northern Cheyenne Reservation. The tract contains recoverable federal coal from the Anderson-Dietz coal seam.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Spring Creek tract. Table B-6 provides additional information on this tract.

TABLE B-6
SPECIFIC TRACT CHARACTERISTICS
Spring Creek

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	658
State	640
Private	0
Total	1,298
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	35
State	37
Private	0
Total	72
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	76
Average Overburden (feet)	110
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	24.5
Percent Ash	3.6
Percent Sulfur	0.3
BTUs per Pound	9,407
Mine Life (Years)	25

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be consumed in an existing electrical generation plant within the Powder River Region.

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 35 million tons of federal coal would be foregone. Approximately 43.8 million dollars of federal mineral royalties would be foregone, as would an estimated 41.5 million dollars in state severance taxes (assuming 12½ percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

Proposed Action — Leasing and Development

The proposed action is to offer the Spring Creek coal tract for federal leasing. This tract has been designated in the Powder River Resource Area Management Framework Plan (MFP) Update Report of July 1979 as acceptable for further consideration for leasing. The land use planning process included the application of unsuitability criteria, multiple use conflict evaluation, and surface owner consultation. Following land use planning, the BLM requested expressions of interest which, along with other information, guided the U.S. Geological Service in delineating this tract.

This tract has been designated as a mine expansion/extension tract in the area of the existing Spring Creek mine. As the designation suggests, this type of federal tract is located within the mining area of an existing mine and contains only sufficient, recoverable reserves to enable the existing mine to expand annual coal production and/or extend the mine's life. The Spring Creek tract is assumed to add to the Spring Creek mine's life, rather than to increase its annual production level. Consequently, there would be no significant change in employment, payroll, or population levels in the area as a result of leasing this tract. For this reason, there are likely to be no significant economic or social impacts to the Northern Cheyenne or Crow Tribe from leasing of the Spring Creek tract.

Basic cultural impacts to the Northern Cheyenne would result from continuing development of this tract. These would include the change in distribution of bird (falcons, hawks, and eagles) and mammal species. The former act as spiritual mediators for the Northern Cheyenne and are used as sources of cancer medicine and items of ritual significance. The mammals, primarily deer and antelope, are also sources of significant ritual items. Air and water pollution would continue to limit access to plants of cultural significant and cause Northern Cheyenne plant specialists to find and develop new collecting localities. Destruction of wells and springs would cause irreparable damage to the spirits associated with the springs and an indeterminate amount of damage to the spiritual attributes of the ground water. Continuing terrain alterations would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The result would be that the area would become spiritually inert and cosmologically dead. This would be an irretrievable loss.

Cultural impacts to the Crow would be caused by development of the Spring Creek tract which has the potential to damage archaeological sites with *baxpe* (sacred) attributes and/or ethnic significance. Site types of particular concern are burials, fasting sites (prehistoric, historic, and modern), rock art sites, Sun Dance localities, sweat lodges, offering sites, Medicine Wheels, and tipi ring sites. The Spring Creek area is one of the most archaeologically sensitive for the Crow (Medicine Crow, 1987). Other cultural impacts to the Crow include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations, decreasing the physical beauty of the environment, disturbing the isolation and natural setting of localities necessary for religious activities and changing the distribution of bird species which are used for ritual items.

B.6 TIR No. 6 — West Decker

Introduction

The West Decker tract is located in Big Horn County, Montana (Map B-2). It lies approximately 19 miles south of the Northern Cheyenne Reservation. The tract contains recoverable federal coal from the Anderson-Dietz coal seam.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the West Decker tract. Table B-7 provides additional information on this tract.

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be consumed in an existing electrical generation plant within the Powder River Region.

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 5 million tons of federal coal would be foregone if this tract is not leased. Approximately 6.3 million dollars of federal mineral royalties would be foregone, as would an estimated 5.9 million dollars in state severance taxes (assuming 12½ percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

TABLE B-7
SPECIFIC TRACT CHARACTERISTICS
West Decker

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	40
State	640
Private	0
Total	680
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	5
State	36
Private	0
Total	41
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	75
Average Overburden (feet)	175
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	23.5
Percent Ash	3.7
Percent Sulfur	0.3
BTUs per Pound	9,553
Mine Life (Years)	30

Proposed Action — Leasing and Development

The proposed action is to offer the West Decker coal tract for federal leasing. This tract has been designated in the Powder River Resource Area Management Framework Plan (MFP) Update Report of July 1979 as acceptable for further consideration for leasing. The land use planning process included the application of unsuitability criteria, multiple use conflict evaluation, and surface owner consultation. Following land use planning, the BLM requested expressions of interest which, along with other information, guided the U.S. Geological Service in delineating this tract.

This tract has been designated as a mine expansion/extension tract in the area of the existing Decker mine. As the designation suggests, this type of federal tract is located within the mining area of an existing mine and contains only sufficient, recoverable reserves to enable the existing mine to expand annual coal production and/or extend the mine's life. The West Decker tract is assumed to add to the Decker mine's life, rather than to increase its annual production level. Consequently, there would be no significant change in employment, payroll, or population levels in the area as a result of leasing this tract. For this reason, there are likely to be no significant economic or social impacts to the Northern Cheyenne or Crow Tribe from leasing of the West Decker tract.

Basic cultural impacts to the Northern Cheyenne would result from continuing development of this tract. These would include the change in distribution of bird (falcons, hawks, and eagles) and mammal species. The former act as spiritual mediators for the Northern Cheyenne and are used as sources of cancer medicine and items of ritual significance. The mammals, primarily deer and antelope, are also sources of significant ritual items. Air and water pollution would continue to limit access to plants of cultural significant and cause Northern Cheyenne plant specialists to find and develop new collecting localities. Destruction of wells and springs would cause irreparable damage to the spirits associated with the springs and an indeterminate amount of damage to the spiritual attributes of the ground water. Continuing terrain alterations would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The result would be that the area would become spiritually inert and cosmologically dead. This would be an irretrievable loss.

Cultural impacts to the Crow would be caused by development of the West Decker tract which has the potential to damage archaeological sites with *baxpe* (sacred) attributes and/or ethnic significance. Site types of particular concern are burials, fasting sites (prehistoric, historic, and modern), rock art sites, Sun Dance localities, sweat lodges, offering sites, Medicine Wheels, and tipi ring sites. The Spring Creek area is one of the most archaeologically sensitive for the Crow (Medicine Crow, 1987). Other cultural impacts to the Crow include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations, decreasing the physical beauty of the environment, disturbing the isolation and natural setting of localities necessary for religious activities and changing the distribution of bird species which are used for ritual items.

NEW MINE TRACTS

B.7 TIR No. 7 — Coal Creek

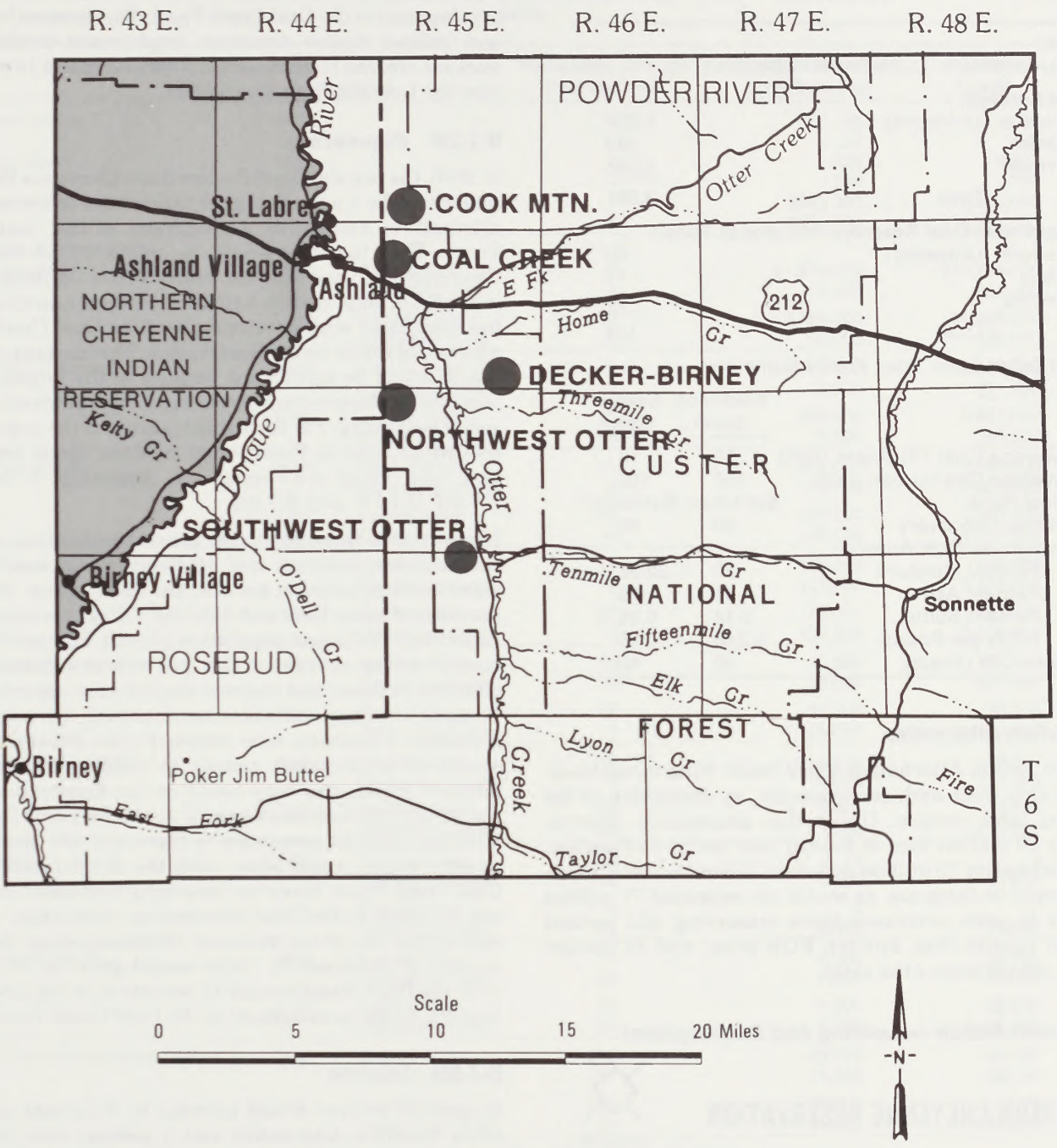
Introduction

The Coal Creek new mine tract is located in Rosebud and Powder River Counties, Montana. (Map B-3) It lies approximately 3 miles east of the Northern Cheyenne Reservation. The tract contains recoverable coal from the Knobloch and the Sawyer coal seams.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Coal Creek tract. Table B-8 provides additional information on this tract.

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be shipped and consumed in an electrical generation plant outside the Powder River Region.

Map B-3



Powder River I
New Mine Tracts

TABLE B-8
SPECIFIC TRACT CHARACTERISTICS
Coal Creek

Type:
Surface Mine/Truck Shovel Operation

Coal Acreage:

Federal (Unleased)	1,032
State	320
Private	1,935
Total	3,287

Recoverable Coal Reserves (Millions of Tons):

Federal (Unleased)	60
State	11
Private	93
Total	164

Coal Data: (from Tract Profile Summary)

	Knobloch Seam	Sawyer Seam
Average Coal Thickness (feet)	50	10
Average Overburden (feet)	150	150
Coal Rank	Subbitum	Subbitum
Percent Recovery	90	90
Proximate Coal Analysis		
Percent Moisture	30	32.25
Percent Ash	4.91	9.6
Percent Sulfur	0.14	0.35
BTUs per Pound	8,246	7,915
Mine Life (Years)	40	40

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 60 million tons of federal coal would be foregone. Approximately 75 million dollars of federal mineral royalties would be foregone, as would an estimated 71 million dollars in state severance taxes (assuming 12.5 percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

Proposed Action — Leasing and Development

NORTHERN CHEYENNE RESERVATION



- WOHEHIV -
The Morning Star

The development of the Coal Creek Tract would significantly affect employment, population, household income, Tribal government, and public expenditures on the Northern Cheyenne Reservation. Table B-9 shows the significant changes which would occur due to the development of this tract. All changes discussed below are for the year 2005.

B.7.1N Employment

Total employment on the Northern Cheyenne Reservation due to the development of this tract would increase by 6 percent over the High Baseline and 5 percent over the Low Baseline. The increase in employment would involve workers taking jobs created both directly and indirectly by development of the Coal Creek Tract. The increase in direct and indirect Native American employment would be 17 workers over the High Baseline Alternative and 14 workers over the Low Baseline Alternative.

B.7.2N Population

In 2005, the population of the Northern Cheyenne Reservation would be 4 percent higher than either of the baseline alternatives due to the development of the Coal Creek Tract. This increase would be made up of Northern Cheyenne and their families who return to the Reservation in search of employment and those workers and their families associated with development of the Coal Creek Tract who would reside on the Reservation. The increase in population would be significant because of the impact of the increase on Reservation services, social organization, and social well-being. For further discussion of the population-related impacts on Reservation services, social organization, and social well-being, see Appendix B, Sections B.7.6N, B.7.7N, and B.7.8N.

In addition to increases in the general population, specific communities, both on and off-Reservation, would have significant population growth. On Reservation, the communities of Lame Deer and Ashland Village are expected to experience the largest population growth. Figures for these communities represent the growth associated with changes in direct and indirect employment opportunities. Because so many variables are involved, the number of Northern Cheyenne who return to the Reservation in search of employment cannot be reliably estimated in terms of where they may reside on the Reservation. As a result, the numbers shown in Table B-8 for Lame Deer and Ashland Village somewhat undercount the population growth which would occur with the development of the Coal Creek Tract. However, returning Northern Cheyenne are included in the total Reservation population change and in the rest of the analysis. Off-Reservation, the community of Ashland/St. Labre would grow by 38 percent over the High Baseline and 43 percent over the Low Baseline due to the development of the Coal Creek Tract.

B.7.3N Income

Household income would increase by 5 percent over the High Baseline Alternative and 4 percent over the Low Baseline Alternative. Of the change in household income, $382,000 represents wages earned by Native Americans over the High Baseline Alternative and $315,000 over the Low Baseline Alternative. Business volume on the Reservation would not be significantly changed by the development of the Coal Creek Tract.

B.7.4N Tribal Fiscal Conditions

Revenue

Tribal revenue would not be significantly affected by the development of the Coal Creek Tract.

TABLE B-9
TRACT IMPACT REPORT NO. 7 — COAL CREEK TRACT
Northern Cheyenne Reservation
2005

	Baseline		Percentage Change Over Baseline	Absolute Change Over Baseline	Baseline Levels
Employment	High		6	36	566
	Low		5	24	469
Population	High		4	235	6,384
	Low		4	239	5,720
Household Income	High		5	$953,000	$18,825,000
	Low		4	$654,000	$16,260,000
Expenditure Needs:					
Housing	High	Capital Cost	9	$1,872,000	$20,384,000
		Operating Cost	4	17,000	483,000
	Low	Capital Cost	16	2,184,000	14,040,000
		Operating Cost	5	20,000	426,000
Water/Sewer	High	Capital Cost	9	778,000	8,402,000
		Operating Cost	3	8,000	271,000
	Low	Capital Cost	16	903,000	5,801,000
		Operating Cost	4	9,000	245,000
Education	High	Capital Cost	11	335,000	2,944,000
		Operating Cost	4	176,000	4,555,000
	Low	Capital Cost	18	355,000	1,969,000
		Operating Cost	4	180,000	4,044,000
Health Care	High	Capital Cost	17	148,000	848,000
		Operating Cost	3	121,000	3,826,000
	Low	Capital Cost	31	172,000	563,000
		Operating Cost	4	138,000	3,429,000
Law Enforcement	High	Capital Cost	25	30,000	120,000
		Operating Cost	5	46,000	891,000
	Low	Capital Cost	12	11,000	93,000
		Operating Cost	6	46,000	762,000
Social Services	High	Capital Cost	12	6,000	50,000
		Operating Cost	4	11,000	270,000
	Low	Capital Cost	18	6,000	33,000
		Operating Cost	5	11,000	216,000
Fire	High	Capital Cost	0	0	0
		Operating Cost	12	3,000	24,000
	Low	Capital Cost	0	0	0
		Operating Cost	19	3,000	16,000
Solid Waste	High	Capital Cost	11	4,000	36,000
		Operating Cost	20	7,000	35,000
	Low	Capital Cost	14	4,000	28,000
		Operating Cost	33	7,000	21,000
Rural Compliance Officer	High	Capital Cost	79	30,000	38,000
		Operating Cost	17	11,000	66,000
	Low	Capital Cost	158	30,000	19,000
		Operating Cost	25	11,000	44,000
Communities With Significant Population Changes					
Northern Cheyenne Reservation:*					
Ashland Village	High		15	36	237
	Low		9	19	216
Lame Deer	High		1	20	1,347
	Low		1	12	1,271
Off-Reservation:					
Ashland/St. Labre	High		38	298	775
	Low		43	220	513

NOTE: All expenditure figures are in 1985 dollars. Actual expenditures required, in 2005 dollars, would likely be considerably higher depending on the inflation rate between 1985 and 2005. See Technical Reports 3 and 4 for information on how these expenditures were calculated.

Source: BLM, 1988

Expenditures

Expenditure needs to provide for increased service demands on the Northern Cheyenne Reservation due to the development of this tract would be significant. Significant increases in capital and operating costs needed to provide adequate services for incoming population are shown in Table B-9. Further information about the level of service demand can be found in Appendix B, Section B.7.6N and in Table B-10.

B.7.5N Tribal Government

Impacts to Tribal government include more complexity in government, a need for increased coordination with other governments, and increased pressure to provide more services to members of the Northern Cheyenne Tribe. As the complexity of Tribal government increases, more Tribal programs would be handled by special committees which could make access to government by individuals more difficult. This could lead to increased feelings of alienation among Tribal members. As the population of the area near the eastern border of the Reservation grows, more jurisdictional conflicts between the Reservation and other governments could occur, creating a need for increased coordination between governments. Increased economic activity due to development of the Coal Creek Tract would create more demands on Reservation services due to the return of Northern Cheyenne to the Reservation in search of employment. In conclusion, the Northern Cheyenne Tribal government would be significantly affected by development of the Coal Creek Tract.

B.7.6N Housing, Services, Infrastructure

This section describes the impacts to housing, services, and infrastructure on the Northern Cheyenne Reservation due to population growth associated with the Coal Creek Tract. In addition to population growth associated directly with mining and secondary employment, regional coal development is expected to stimulate a return-migration of Tribal members to the Reservation in search of employment. Inmigration of Native Americans in search of employment accounts for much of the increase in service demand from this tract. Under the Coal Creek Tract, the Native American population on the Northern Cheyenne Reservation is projected to increase 4 percent over the Low Baseline Alternative and 3 percent over the High Baseline Alternative. Population increases for non-Native Americans are 5 percent over the Low Baseline and 9 percent over the High Baseline.

Tables B-9 and B-10 show the increased capital expenditures/annual operating costs and service demands on the Northern Cheyenne Reservation as a result of the Coal Creek Tract. The section below briefly discusses each of the various services. The service-demand estimates and associated cost estimates in the above mentioned tables are based on changes over and above the baseline alternatives and represent providing adequate service to that increment of population change resulting from the Coal Creek Tract development. A high level of concern was expressed at the Northern Cheyenne Scoping Meeting (BLM, 1987), in letters received during the scoping process and at individual interviews on the Reservation, regarding the possible impacts to Reservation services from coal development. The service-demand values presented in this section are calculated using regional service-demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. Those are both described in Technical Report 3.

Housing

Demand for housing would be high with Coal Creek Tract development. It is unlikely the 1988 deficiency of 420 units, combined with the demand from the High and Low Baseline Alternatives (407 and 270 houses, respectively), would be met by 2005, much less the provision of 50 homes needed as a result of the Coal Creek Tract development. Newly formed Native American families and Native Americans returning to the Reservation would probably live with friends or relatives, exacerbating the crowded conditions of existing housing units.

Concern regarding Reservation housing was frequently mentioned by Northern Cheyenne Reservation residents during the scoping meeting and in individual interviews. Impacts to Reservation housing are expected to be severe under the Coal Creek Tract because of the high level of demand which would intensify current (1987) and expected baseline inadequate conditions, including crowded housing, and the high levels of expenditures that would be required to meet tract demands. The cumulative impacts from Coal Creek development, when combined with either baseline, would be very severe.

Water and Sewer

The impacts on water and sewer systems from the tract depend on whether additional housing is built. Even if no additional housing were developed, the doubling or tripling of families in existing housing would probably cause existing water and sewer systems, already expected to be stressed by the baseline populations, to be further stressed to meet the needs associated with Coal Creek Tract development. This additional stress would be mild. If HUD funds are obtained for housing, Indian Health Service (IHS) funding would also be made available for matching sewer and water systems. It is assumed that housing acquired by non-Native Americans would either be served by existing systems or by individual wells and septic tanks.

Solid Waste

Solid waste is held at canister sites on the Reservation prior to being shipped to off-Reservation dumps. The population increase associated with development of the Coal Creek Tract would require the addition of one canister on the Reservation for interim solid waste disposal. The current (1986-1987) problems with canister sites, (i.e., equipment, maintenance, personnel, high waste disposal costs, and fires) would likely continue. Impacts on solid waste disposal on the Northern Cheyenne Reservation under Coal Creek tract development would be mild if baseline alterna-

TABLE B-10
CHANGES[1] IN FACILITIES/SERVICES — COAL CREEK TRACT
Northern Cheyenne Reservation
2005

	Tract Only Above High Baseline	Cumulative Impacts of Tract and High Baseline	Tract Only Above Low Baseline	Cumulative Impacts of Tract and Low Baseline
No. Housing Units That Can Accommodate Families:				
Native American Families	36	427	42	312
Non-Native American Families	14	30	8	8
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	0	1	0	0
Non-Native American Singles	5	9	2	2
Water Requirements:				
Water Flows (gpd)*	27200	320300	31500	233900
Water Storage (gpd)*	45300	533800	52500	389800
Sewage Treatment Requirements (gpd):*	18100	203300	21000	155900
Schools:				
No. Students in Grades 1-8[2]	27	266	28	188
No. Students in Grades 9-12[2]	6	60	6	42
No. Teachers in Grades 1-8[3]	1.5	15.0	1.5	10.5
No. Teachers in Grades 9-12[3]	0.5	3.5	0.5	2.5
Sq. Ft. School Space, Grades 1-8[3]	2700	26600	2800	18800
Sq. Ft. School Space, Grades 9-12[3]	800	7500	800	5300
Health Care:				
No. of Physicians				
Native American	0.5	3.0	0.5	2.0
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	1.0	0.5	1.0
Non-Native American	0	0	0	0
No. Nurses				
Native American	0.5	5.5	0.5	4.0
Hospital Beds				
Native American[4]	0.5	8.5	1.0	6.5
Non-Native American	0.5	0.5	0	0
Ambulance Service				
Personnel	0	5.0	0	0
Vehicles	0	1.0	0	0
Law Enforcement:				
No. of Officers	1	8.5	1	6
No. of Vehicles	1	3.0	0	2
Sq. Ft. Office Space	100	850	100	600
Fire Protection:				
No. of Volunteer Officers	0	0	0	0
No. of Vehicles	0	0	0	0
Sq. Ft. Office/Storage Space	0	0	0	0
Social Services:				
No. of Social Workers				
Native American	0.5	5.0	0.5	3.5
Non-Native American	0	0	0	0
Population Change:				
Native American	181	2135	210	1559
Non-Native American	54	113	29	29

*gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for the Tract Only are measured against the High or Low Baseline. The cumulative impacts include the tract and the High or Low Baseline and are measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

tive needs were met. However, impacts would be severe if the solid waste disposal sites at Birney Village and Lame Deer were not constructed (or reconstructed) and additional canisters identified under the baseline alternatives were not provided.

Education

Under High and Low Baseline conditions, there would be an increase of 74 students and 76 students, respectively, in the year 2005. Reservation students currently have a variety of school options available to them; see Chapter 3, Section 3.6.N, for a detailed discussion of these options. Table B-10 shows increased demands for teachers and school space for Lame Deer Elementary and Busby Tribal School if Reservation students continue to attend Reservation schools in the 1987 proportions. See Technical Report 3 for a discussion of how numbers of Reservation students were calculated.

Reservation students attending off-Reservation schools may be affected by tract development if those schools become crowded due to off-Reservation population increases. The current problems at schools attended by Reservation students such as students frequently switching between schools, high dropout rates, long commutes over poor roads, and little involvement with Northern Cheyenne culture and language would continue. Concern about Reservation schools and education of Reservation school children was frequently expressed during the Northern Cheyenne Scoping Meeting and individual interviews on the Reservation. Of particular concern is the increasing number of Reservation students attending off-Reservation schools. These concerns and problems are discussed in more detail in Chapter 4, Section 4.2.6N. Impacts to education under either the Low or High Baseline conditions are expected to be mild to moderate under Coal Creek Tract development due to the increases in Reservation students attending Reservation and off-Reservation schools.

Health Care

Table B-10 details the increase in demand for doctors, dentists, nurses, and hospital beds for Coal Creek Tract over each of the baseline alternatives. Additional demands could also be placed on the clinic by Native Americans moving into areas adjacent to the Reservation such as St. Labre and Ashland. Additional Contract Health Service (CHS) funding from IHS would have to be made available so Native Americans could receive major medical care off-Reservation. Outpatient medical services for non-Native Americans would continue to be unavailable on the Reservation. There would also be an increase in demand for alcoholism and drug abuse treatment services due to Reservation and regional population growth.

Ambulance service would be adequate for Coal Creek Tract if the additional vehicle and personnel were added under High Baseline Alternative conditions. If the vehicle and additional personnel were not added, ambulance service would be inadequate. With Coal Creek over Low Baseline conditions, coverage would be inadequate if additional personnel (see Chapter 4A, Section 4A.1.6N) were not added for the baseline population. Increases in traffic across the Reservation due to regional population growth could also increase the demand on Reservation ambulances; this demand is not quantified.

Demand for urgent medical services, which are available to Native Americans and non-Native Americans from Lame Deer Clinic, would rise in step with the increase in population and Reservation road usage. If traffic increases cause more accidents involving Native Americans, the need for CHS funding would increase so that treatment for serious injuries could be provided off-Reservation.

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned during the Northern Cheyenne scoping process and in individual interviews on the Reservation. Mild to moderate impacts to the health care system are expected with Coal Creek Tract development because of the importance of these services and the costs associated with providing them. The cumulative impacts from Coal Creek development, when combined with either baseline, would be severe. The types of impacts to health care on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.6N.

Law Enforcement

With Coal Creek development, one additional police officer would be needed due to the increases in Reservation population. However, the demand figure may underestimate the real situation because, in addition to the demand created directly by Reservation population increases, the police may need to respond to more traffic accidents due to increased regional traffic passing through the Reservation; more crime associated with higher rates of alcohol and drug abuse; more trespassing due to regional population growth; and more disputes involving Native Americans and non-Native Americans, both on the Reservation and at nearby off-Reservation locations. More complete coverage to outlying areas, such as Birney Village and Ashland Village, would have to be provided. The adoption of the new legal code on the Northern Cheyenne Reservation may also increase future police work.

The already backlogged Tribal Court system (see Chapter 3, Section 3.6.N) would see an increase in cases, particularly those involving credit transactions, business transactions, and alcohol and drug-related offenses, creating additional impacts the Tribe is poorly equipped to deal with. Problems with law enforcement and multiple jurisdictions particularly concern Reservation residents and were mentioned frequently at the scoping meeting and during individual interviews on the Reservation.

Mild to moderate impacts to the Reservation police and courts from Coal Creek Tract development are expected due to the increases in demand and the costs of providing these services. The cumulative impacts from Coal Creek development, when combined with either baseline, would be severe.

Fire Protection

The population growth under Coal Creek Tract development and the coincident potential increase in structural fires may lead to a demand for organized structural fire protection on the Reservation. This demand could mean providing vehicles in each community and increasing the number and training of volunteer firefighters. With the increased traffic on the Reservation, there may be more vehicle fires on the road system or fires adjacent to the roads caused by vehicles. Without the organized structural fire protection program, structural fire protection on the Reservation would be inadequate; any additional demand would make the situation worse.

Increases in the recreational use of the Reservation and use of the canister sites (where numerous fires have occurred, Feeney, et al., 1986), both due to Reservation and regional population growth, could cause more range and forest fires. If a significant increase occurred in the number of fires, the BIA Forestry Program firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these impacts is unknown.

Roads

Table B-11 shows the increased use of Reservation roads with Coal Creek Tract development over the High and Low Baselines. Traffic on U.S. 212, the major east-west road across the Northern Cheyenne Reservation, would increase 2 to 3 percent over the High and Low Baseline conditions in 2005. When High Baseline changes are included, this figure would be 12 to 14 percent above the current situation by 2005. These estimates are based on increases in mine construction and operation commuter traffic. There would be additional traffic from indirect employees, and Reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to the mine and expanded regional business activity would also increase. However, these types of increases are very difficult to quantify.

Concerns regarding Reservation roads, particularly increases in truck traffic, the number of loaded school buses crossing the Reservation daily, and increased traffic at Lame Deer and Birney Village, were expressed at the scoping meeting and frequently during individual interviews. Mild impacts to the Reservation road system are expected due to the increased traffic and because some Reservation roads are currently in poor condition. These traffic increases would result in higher maintenance costs and more accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents.

TABLE B-11
INCREASES IN ROAD USE[1] — COAL CREEK TRACT
Northern Cheyenne Reservation
2005

	Tract Only Above High Baseline		Cumulative Impacts Tract and High Baseline[2,4] — 2005		Tract Only Above Low Baseline		Cumulative Impacts Tract and Low Baseline[3,4] — 2005	
	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]
West Border to Lame Deer (U.S. 212)	30	2	213	14	35	2	35	2
Lame Deer to East Border (U.S. 212)	44	3	196	12	41	3	41	3
Lame Deer to N. Border (MT 39)	9	1	84	8	3	0	3	0
Lame Deer to Birney Village	0	0	1	0	0	0	0	0
Kirby Road	16	4	180	92	18	9	18	9
Ashland Village to Birney Village	6	3	22	11	6	3	6	3

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activity) is not included.
[2] Includes Coal Creek Tract and the High Baseline Alternative measured against current figures.
[3] Includes Coal Creek Tract and the Low Baseline Alternative measured against current figures.
[4] Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily figure.
[5] Percent change in number of daily trips over the appropriate baseline or the current situation.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

Recreation

There would be some increased usage of recreational facilities on the Reservation under Coal Creek Tract development due to Reservation population growth and higher usage of the Reservation by people living off-Reservation. There could also be more poaching, littering, trespassing, and conflicts over recreation resources and facility use (Feeney, et al., 1986). One half-time compliance officer, to police recreation areas, would be needed to meet the expected increase in use under both the High and Low Baselines. These impacts are expected to be mild.

Social Services

The inmigration of Native Americans projected under Coal Creek Tract development would pressure the already (1987) inadequately staffed Reservation social service system which provides services such as child welfare, general assistance, etc. An additional half-time social worker would be required over the High and Low Baseline levels to meet the increased population needs associated with tract development. If returning Native Americans are unable to find employment and/or if the population growth both on and off the Reservation results in increased stress on families (creating poverty and abuse situations), the demand on social services could rise at an even higher rate than expected. Impacts to social services were frequently mentioned concerns at the Northern Cheyenne Scoping Meeting and in individual interviews on the Reservation. Impacts to social services from tract development are expected to be mild.

Other Services

On- and off-Reservation population growth as a result of Coal Creek Tract development would lead to increasing pressures on a variety of other services such as care for the elderly and Dull Knife Memorial College in Lame Deer. Most Reservation services are currently experiencing funding shortages so it may be very difficult to expand services for a growing population. For example, Dull Knife Memorial College may see an increase in non-Native American students from off-Reservation communities such as Colstrip and Ashland; the college currently receives no funding from the state or federal government for these students. Mild impact to Dull Knife Memorial College is expected from the development of Coal Creek because any increase in non-Native American students would put financial stress on the college.

B.7.7N Social Organization

Under the Coal Creek Tract development, moderate impacts to social organization would occur on the Northern Cheyenne Reservation because of the following factors: (1) migration of non-Native Americans onto the Reservation, (2) return-migration (migration back onto the Reservation by former residents) of Native Americans (including potential employees and their families) in search of the benefits of development, (3) coal-related population increases in areas directly adjacent to the Reservation (the population of the Ashland/St. Labre area can be used as an indicator), (4) regional population growth in areas such as Broadus, Miles City, Sheridan, Colstrip, Forsyth, Hardin, and Billings that are not directly adjacent to the Reservation but, nevertheless, would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for activities such as school, shopping, recreation, (5) Native Americans (both inmigrating and current residents) would obtain direct and indirect employment in the coal mine industry resulting in an increased annual payroll to Reservation Native Americans, and (6) changes in social well-being. Table B-12 quantifies the relative changes in each of these impact factors over the High and Low Baselines in the year 2005. The cumulative impacts of Coal Creek Tract development, combined with the High or Low Baseline Alternative, would produce severe changes in Northern Cheyenne social organization.

Greater contact with non-Native Americans, both on and off-Reservation, and the return-migration of Native Americans who have lived off the Reservation would increase the diversity of ideas, values and behaviors on the Reservation. There may be more interaction between the Tribal government and county and state government as the Tribal government attempts to provide for increasing service demands. There may also be an increase in feelings of a local lack or loss of control because the decisions regarding coal development are made off-Reservation.

Conflict among Native American social groups on the Reservation would probably increase. Much of the current conflict among social groups occurs because of the perceived inequality in access to resources, such as jobs and income. These conflicts would likely increase because relatively high paying employment would be obtained by some individuals, while the effects of coal development would be felt by all.

Some changes in personal interaction may occur with increased potential for conflicts with non-Native Americans, both on the Reservation and in adjacent communities. For example, existing problems between Native Americans and non-Native Americans in Ashland would probably be exacerbated. Rapid growth is expected in the Ashland area, and Ashland may have difficulty dealing with the growth because it is an unincorporated community without a history of coordinated response to development (BLM, 1984; Mountain West Research — North, 1982). The isolated community of Birney Village is vulnerable to changes in social organization caused by changes in Reservation traffic and non-Native American presence on the Reservation.

Coal development would create substantial benefits for the individual Native Americans who were able to obtain employment. Because of traditional sharing patterns, this income may benefit more people than just the families where employment occurs. An increase of 14 to 17 jobs (depending upon the baseline) is significant to a Tribe with an approximately 50 percent unemployment rate.

TABLE B-12
CHANGES [1] IN IMPACT FACTORS — SOCIAL ORGANIZATION
COAL CREEK TRACT
Northern Cheyenne Reservation
2005

Factors	High Baseline Alternative	Tract Only Over High Baseline Alt.	Low Baseline Alternative	Tract Only Over Low Baseline Alt.
Inmigration of Non-Native Americans	59	54	0	29
Return Migration of Native Americans [2]	200-250	50-100	0	100-150
Change in Off-Reservation Population				
Ashland/St. Labre (1987 population = 513)	262	298	0	220
Percent change	51%	38%	0	43%
Colstrip (1987 population = 1,581)	358	7	310	8
Percent change	23%	0%	20%	0%
Change in direct and indirect Native American Employment	77	17	0	14
Total annual associated payroll for Native Americans	$1,400,000	$381,800	0	$315,350
Level of impact to Reservation roads	Moderate	Mild	Mild	Mild
Level of impact to social well-being	Severe	Moderate	Moderate to Severe	Moderate

[1] Unless otherwise indicated, baseline figures are for 2005 measured against 1987; Tract figures are for 2005 measured against the High or Low Baseline.
[2] This return-migration would occur during project construction.

NOTE: Cumulative impacts can be obtained by adding leasing alternative and baseline alternative numbers together.

Source: BLM, 1987

The types of impacts to social organization on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.7N.

B.7.8N Social Well-Being

During development associated with the Coal Creek Tract, changes would occur in social well-being due to changes in availability of services and facilities; changes in employment and business activity; stress caused by changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. There would be mild to severe stress on Reservation facilities and services due to on-Reservation and regional population growth. The demand for housing would force the doubling or tripling of families in existing dwellings. Increases in stress on individuals associated with changes in cultural conditions and social organization, crowded housing, service/infrastructure shortfalls, and increased availability of drugs could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. In addition, there is concern that alcohol and drug abuse affects the ability of Northern Cheyenne people to practice their traditional religion and of parents to teach their children the Cheyenne way.

Social well-being in Ashland Village would be influenced by the rapid population growth in Ashland, which may increase alcoholism and drug abuse, and conflicts between Native and non-Native Americans. Changes in the traditional, isolated, quiet nature of Birney Village would distress Birney Village residents and decrease their social well-being.

Increases in social well-being would occur to those who were able to obtain employment or benefit from business expansion as a result of the increased income on the Reservation. Employment in the coal industry and related fields would provide income to those able to obtain jobs.

It is likely that, as a whole, Tribal members would feel less well off after coal development associated with the Coal Creek Tract. Many of the problems they see as most critical (alcohol and drug abuse, inadequate community services, unemployment and poverty, crime, lack of communication among people, family problems (Feeney, et al., 1986; BLM, 1987)) may be exacerbated by coal development. Perhaps of greater importance is the likelihood that those Northern Cheyenne who would not be able to take advantage of benefits associated with tract development would feel

further deprived of economic equality. This deprivation might be relative, but it would be a very real perception to the persons who experienced it.

Changes in social well-being associated with development of the Coal Creek Tract are expected to be moderate. The cumulative impacts of Coal Creek Tract development, when combined with the High or Low Baseline Alternative, would produce severe changes in Northern Cheyenne social well-being. The types of impacts to social well-being on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.8N. See Appendix B, Section B.7.9N for related information on impacts to cultural conditions under this tract.

B.7.9N Cultural Conditions

The development of the Coal Creek new mine tract would change living earth/the Earth-Surface Dome into dead earth/Deep Earth. The result would be that the area would become spiritually inert and cosmologically dead. This would be an irretrievable loss.

The Coal Creek new mine tract is of particular concern to the Northern Cheyenne, as are all other new mines on the eastern side of the Reservation. Cultural impacts resulting from the development of this tract would include (1) disturbance of burial sites, early Cheyenne homesteading sites, battle sites, and areas used in the past for religious purposes that retain spiritual attributes, (2) terrain alterations disturbing the physical and spiritual relationship between the Holy Lodge and its environmental setting, and between Birney and Ashland Villagers and their environmental setting, (3) possible loss of access to the pigment source essential to the Sun Dance, and (4) terrain alterations and the increasing population density associated with proposed new mines would sufficiently change the physical and spiritual aspects of the environmental setting so that many Birney Villagers would have to abandon their lifelong homes.

The earth paints currently collected from the source east of the Reservation are absolutely essential to the Sun Dance. If this source is destroyed or if the Northern Cheyenne no longer have access to it, the military societies would determine the proper course of action. The most likely action would be for members of the military societies to search out and direct the appropriate Cheyenne priests to the new paint source. It is extremely demoralizing to the Northern Cheyenne to be unable to get the proper items for a ritual since correctness of the ritual and ritual items is crucial to the success of the ceremony. This is particularly important in terms of the Sun Dance/New Life Lodge since it is central and indispensable to traditional Cheyenne religion.

Further, the development of this new mine tract would reduce the seclusion and privacy necessary for on-going religious practices such as fasting, prayer, and meditation. The reduction of social and physical isolation would also result in Birney Village children growing up in a more stressful environmental setting and being limited in their ability to range free over a rural landscape and develop a proper respect for the spiritual and physical aspects of the environment.

More generic cultural impacts would also result from leasing of any of the new mine tracts. These include the change in distribution of bird and mammal species. The former act as spiritual mediators for the Northern Cheyenne and are used as sources of cancer medicine and items of ritual significance. The mammals, primarily deer and antelope, are also sources of significant ritual items. Air and water pollution may limit access to plants of cultural significant and cause Northern Cheyenne plant specialists to find and develop new collecting localities. Destruction of wells and springs would cause irreparable damage to the spirits associated with the springs and an indeterminate amount of damage to the spiritual attributes of the ground water. Finally, increasing non-Native American population density and the related increase in contacts with the dominant society would create a social environment which would contribute to the language loss of the Northern Cheyenne. This is a cultural impact because people's beliefs and values are encoded and reinforced by their language.

CROW RESERVATION

B.7.1C Employment

The change in total employment due to development of the Coal Creek Tract would not significantly affect the economy of the Crow Reservation.

B.7.2C Population

The change in Reservation population due to development of this tract would not be significant.

B.7.3C Income

Changes in household income and business volume from development of the Coal Creek Tract would not significantly affect the economy of the Crow Reservation.

B.7.4C Tribal Fiscal Conditions

Revenue

The development of the Coal Creek Tract would not significantly change the amount of revenue the Crow Tribe receives.

Expenditures

Expenditure needs to provide for increased service demands on the Crow Reservation would not be significant.

B.7.5C Tribal Government

The development of the Coal Creek Tract would not significantly affect Crow Tribal government. This is because of

the distance between the tract and the Crow Reservation and the resultant insignificant changes to income, population, and employment on the Reservation.

B.7.6C Housing, Services, Infrastructure

There would be no significant impact to housing, water, sewer, solid waste, education, health care, law enforcement, fire protection, roads or recreation on the Crow Reservation from Coal Creek Tract development.

Railroads

Increases in rail traffic over existing rail lines could cause more accidents and fires along the rail beds. Changes in rail traffic due to handling coal depend on where the coal is being transported. Because of the difficulty in predicting the location of future coal purchases, the level of significance of these impacts is unknown.

B.7.7C Social Organization

There would be no significant impact to social organization on the Crow Reservation from Coal Creek Tract development.

B.7.8C Social Well-Being

There would be no significant impact to social well-being on the Crow Reservation from Coal Creek Tract development.

B.7.9C Cultural Conditions

Cultural impacts to the Crow from leasing this new mine tract include: changing the spiritual qualities of the environment in an indeterminate fashion as a result of terrain alterations, decreasing the physical beauty of the environment, disturbing the isolation and natural setting of areas necessary for religious activities, changing the distribution of bird species which are used for ritual items, possible disturbance to archaeological sites with spiritual and/or ethnic significance, and a possible reduction in the social isolation of the Crow. Reduction in the social isolation of the Crow would create a social setting in which loss of ethnic identity would be reinforced by increasing discrimination, jurisdictional disputes, and land and language loss.

B.8 TIR No. 8 — Cook Mountain

Introduction

The Cook Mountain new mine tract is located in Powder River County, Montana. (Map B-3) It lies approximately 2 miles east of the Northern Cheyenne Reservation. The tract contains recoverable coal from the Knobloch and the Sawyer coal seams.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Cook Mountain tract. Table B-13 provides additional information on this tract.

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be shipped and consumed in an electrical generation plant outside the Powder River Region.

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 178 million tons of federal coal would be foregone. Approximately 222.5 million dollars of federal mineral royalties would be foregone, as would an estimated 210.9 million dollars in state severance taxes (assuming 12.5 percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

TABLE B-13
SPECIFIC TRACT CHARACTERISTICS
Cook Mountain

Type:
Surface Mine/Truck Shovel Operation

Coal Acreage:

Federal (Unleased)	2,096
State	80
Private	1,391
Total	3,567

Recoverable Coal Reserves (Millions of Tons):

Federal (Unleased)	178
State	0
Private	76
Total	254

Coal Data: (from Tract Profile Summary)

	Knoblock Seam	Sawyer Seam
Average Coal Thickness (feet)	62	10
Average Overburden (feet)	150	150
Coal Rank	Subbitum	Subbitum
Percent Recovery	90	90
Proximate Coal Analysis		
Percent Moisture	30	32.25
Percent Ash	4.9	9.6
Percent Sulfur	0.14	0.35
BTUs per Pound	8,246	7,915
Mine Life (Years)	40	40

Proposed Action — Leasing and Development

NORTHERN CHEYENNE RESERVATION



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The Morning Star

The development of the Cook Mountain Tract would significantly affect the employment, population, household income, Tribal government, and public expenditures on the Northern Cheyenne Reservation. Table B-14 shows the significant changes which would occur due to development of this tract. All changes discussed below are for the year 2005.

B.8.1N Employment

Total employment on the Northern Cheyenne Reservation due to the development of this tract would increase by 8 percent over each baseline. The increase in employment would involve workers taking jobs created both directly and indirectly by development of the Cook Mountain Tract. The increase in direct and indirect Native American employment would be 24 workers over the High Baseline Alternative and 23 workers over the Low Baseline Alternative.

B.8.2N Population

The population change for the Cook Mountain Tract over the High Baseline Alternative does not include Native Americans who would return to the Reservation in search of employment because the assumed start date for the Cook Mountain Tract occurs at the same time as one of the High Baseline Alternative mines. It is assumed that these people would be returning to the Reservation anyway because of the High Baseline mine and therefore, in the analysis, they are all attributed to the High Baseline mine rather than the Cook Mountain Tract. It is not possible to separate returning Northern Cheyenne to a specific mine. If returning Northern Cheyenne in search of employment were included, the percentage changes compared to the High Baseline Alternative would be similar to those changes shown for the Cook Mountain Tract compared to the Low Baseline Alternative. Population growth on the Reservation would be considered significant because of the impact of the increase on Reservation services, social organization, and social well-being. Development of the Cook Mountain Tract would increase population on the Reservation by 4 percent over the Low Baseline Alternative. For further discussion of the population-related impacts on Reservation services, social organization, and social well-being, see Appendix B, Sections B.8.6N, B.8.7N, and B.8.8N.

In addition to increases in the general population, specific communities, both on- and off-Reservation, would have significant population growth. On Reservation, the communities of Ashland Village and Lame Deer are expected to experience the largest population growth. Figures for these communities represent population growth associated with changes in direct and indirect employment opportunities. Because so many variables are involved, the number of Northern Cheyenne who return to the Reservation in search of employment cannot be reliably estimated in terms of where they may reside on the Reservation. As a result, the numbers shown in Table B-14 for Lame Deer and Ashland Village may somewhat undercount the population growth that would occur with development of the Cook Mountain Tract. However, returning Northern Cheyenne are included in the total Reservation population change with the Low Baseline and in the rest of the Low Baseline analysis.

B.8.3N Income

Household income would increase by 7 percent over the High Baseline Alternative and by 6 percent over the Low Baseline Alternative. Of the change in household income, $547,000 represents wages earned by Native Americans when compared to the High Baseline Alternative, and $515,000 when compared to the Low Baseline Alternative. Business volume on the Northern Cheyenne Reservation would not be significantly changed by development of the Cook Mountain Tract.

B.8.4N Tribal Fiscal Conditions

Revenue

Tribal revenue would not be significantly affected by development of the Cook Mountain Tract.

Expenditures

Expenditure needs to provide for increased service demands on the Northern Cheyenne Reservation due to the development of this tract would be significant. Significant increases in capital and operating costs needed to provide adequate services for incoming population are shown in Table B-14. Further information about the level of service demand can be found in Appendix B, Section B.8.6N and in Table B-15.

B.8.5N Tribal Government

Impacts to Tribal government include more complexity in government, a need for increased coordination with other governments and increased pressure to provide more services to members of the Northern Cheyenne Tribe. As the complexity of Tribal government increases, more Tribal programs would be handled by special committees which could make access to government by individuals more difficult and could lead to increased feelings of alienation among Tribal members. As the population of the area near the eastern border of the Reservation increases, more jurisdictional conflicts between the Reservation and other governments could occur, creating a need for increased coordination between governments. Increased economic activity due to the development of the Cook Mountain Tract would create more demands on Reservation services. In conclusion, the Northern Cheyenne Tribal government would be significantly affected by development of the Cook Mountain Tract.

TABLE B-14
TRACT IMPACT REPORT NO. 8 — COOK MOUNTAIN TRACT
Northern Cheyenne Reservation
2005

	Baseline		Percentage Change Over Baseline	Absolute Change Over Baseline	Baseline Levels
Employment	High		8	43	566
	Low		8	37	469
Population	High		1	67	6,384
	Low		4	250	5,720
Household Income	High		7	$1,230,000	$18,825,000
	Low		6	$990,000	$16,260,000
Expenditure Needs:					
Housing	High	Capital Cost	0	$52,000	$20,384,000
		Operating Cost	0	0	483,000
	Low	Capital Cost	15	2,184,000	14,040,000
		Operating Cost	5	20,000	426,000
Water/Sewer	High	Capital Cost	0	22,000	8,402,000
		Operating Cost	0	0	271,000
	Low	Capital Cost	16	903,000	5,801,000
		Operating Cost	4	9,000	245,000
Education	High	Capital Cost	3	81,000	2,944,000
		Operating Cost	1	43,000	4,555,000
	Low	Capital Cost	18	355,000	1,969,000
		Operating Cost	5	187,000	4,044,000
Health Care	High	Capital Cost	0	4,000	848,000
		Operating Cost	0	7,000	3,826,000
	Low	Capital Cost	31	172,000	563,000
		Operating Cost	4	139,000	3,429,000
Law Enforcement	High	Capital Cost	0	0	120,000
		Operating Cost	1	13,000	891,000
	Low	Capital Cost	32	30,000	93,000
		Operating Cost	6	49,000	762,000
Social Services	High	Capital Cost	0	0	50,000
		Operating Cost	0	0	270,000
	Low	Capital Cost	18	6,000	33,000
		Operating Cost	5	11,000	216,000
Fire	High	Capital Cost	0	0	0
		Operating Cost	4	1,000	24,000
	Low	Capital Cost	0	0	0
		Operating Cost	19	3,000	16,000
Solid Waste	High	Capital Cost	0	0	36,000
		Operating Cost	0	0	35,000
	Low	Capital Cost	14	4,000	28,000
		Operating Cost	33	7,000	21,000
Rural Compliance Officer	High	Capital Cost	79	30,000	38,000
		Operating Cost	25	11,000	66,000
	Low	Capital Cost	158	30,000	19,000
		Operating Cost	25	11,000	44,000
Communities With Significant Population Changes					
Northern Cheyenne Reservation:*					
Ashland Village	High		14	32	237
	Low		11	23	216
Lame Deer	High		2	24	1,347
	Low		1	17	1,271
Off-Reservation:					
Ashland/St. Labre	High		46	358	775
	Low		54	278	513

NOTE: All expenditure figures are in 1985 dollars. Actual expenditures required, in 2005 dollars, would likely be considerably higher depending on the inflation rate between 1985 and 2005. See Technical Reports 3 and 4 for information on how these expenditures were calculated.

Source: BLM, 1988

B.8.6N Housing, Services, Infrastructure

This section describes the impacts to housing, services, and infrastructure on the Northern Cheyenne Reservation due to population growth associated with the Cook Mountain Tract. In addition to population growth associated directly with mining and secondary employment, regional coal development is expected to stimulate a return-migration of Tribal members to the Reservation in search of employment. When the Cook Mountain Tract is over Low Baseline conditions, inmigration of Native Americans in search of employment accounts for much of the increase in service demand from this tract. This return-migration does not occur for the Cook Mountain Tract over High Baseline conditions (see Appendix B, Section B.8.2N). With the Cook Mountain Tract, the Native American population on the Northern Cheyenne Reservation is projected to increase 4 percent over the Low Baseline Alternative. The increase in Native Americans over the High Baseline Alternative would be less than 1 percent. Non-Native Americans increases are 7 percent over the Low Baseline and 10 percent over the High Baseline Alternative.

Tables B-14 and B-15 show the increased expenditures/annual operating costs and service demands on the Northern Cheyenne Reservation as a result of the Cook Mountain Tract. The section below briefly discusses each of the various services. The service-demand estimates and associated cost estimates in the above mentioned tables are based on changes over and above the baseline alternatives and represent providing adequate service to that increment of population change resulting from the Cook Mountain Tract development. A high level of concern was expressed at the Northern Cheyenne Scoping Meeting (BLM, 1987), in letters received during the scoping process and at individual interviews on the Reservation, regarding the possible impacts to Reservation services from coal development. The service-demand values presented in this section are calculated using regional service-demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. Those are both described in Technical Report 3.

Housing

Demand for housing would be high with Cook Mountain Tract development. It is unlikely the 1988 deficiency of 420 units, combined with the demand from the High and Low Baseline Alternatives (407 and 270 houses, respectively), would be met by 2005, much less the provision of 18 or 53 homes (depending on the baseline) needed as a result of the Cook Mountain Tract development. Newly formed Native American families and Native Americans returning to the Reservation would probably live with friends or relatives, exacerbating the crowded conditions of existing housing units.

Concern regarding Reservation housing was frequently mentioned by Northern Cheyenne Reservation residents during the scoping meeting and in individual interviews. Severe impacts to Reservation housing are expected with Low Baseline conditions and moderate impacts with High Baseline conditions because of the high level of demand that would intensify current (1987) and expected inadequate baseline conditions, including crowded housing, and the high levels of expenditures that would be required to meet tract demands. The cumulative impacts from Cook Mountain development, when combined with either baseline, would be severe.

Water and Sewer

The impacts on water and sewer systems from the tract are dependent on whether additional housing is built. Even if no additional housing were developed, the doubling or tripling of families in existing housing would cause existing water and sewer systems, already expected to be stressed by the Low Baseline populations, to be further stressed to meet the needs associated with Cook Mountain Tract development. This additional stress would be mild. Under High Baseline conditions, this impact would be insignificant because the Native American population increase would be less than one percent. If HUD funds are obtained for housing, IHS funding would also be made available for matching sewer and water systems. It is assumed that housing acquired by non-Native Americans would either be served by existing systems or by individual wells and septic tanks.

Solid Waste

Solid waste is held at canister sites on the Reservation prior to being shipped to off-Reservation dumps. The population increase associated with development of the Cook Mountain Tract over the Low Baseline would require the addition of one canister on the Reservation for interim solid waste disposal. The current (1986-1987) problems with canister sites, (i.e., equipment, maintenance, personnel, high waste disposal costs, and fires) would likely continue. Solid waste disposal problems on the Northern Cheyenne Reservation under Cook Mountain Tract development (Low Baseline) would be mild if the Low Baseline Alternative needs were met. However, impacts would be severe if the solid waste disposal sites at Birney Village and Lame Deer were not constructed (or reconstructed) and additional canisters identified under the Low Baseline Alternative were not provided. Under High Baseline Alternative conditions, the impacts to solid waste disposal would be insignificant.

Education

Under High and Low Baseline conditions, there would be an increase of 18 students and 79 students, respectively, in the year 2005. Reservation students currently have a variety of school options available to them; see Chapter 3, Section 3.6.N, for a detailed discussion of these options. Table B-15 shows increased demands for teachers and school space for Lame Deer Elementary and Busby Tribal School if Reservation students continue to attend Reservation schools in the 1987 proportions. See Technical Report 3 for a discussion of how numbers of Reservation students were calculated.

Reservation students attending off-Reservation schools may be affected by tract development if those schools become crowded due to off-Reservation population

TABLE B-15
CHANGES[1] IN FACILITIES/SERVICES — COOK MOUNTAIN TRACT
Northern Cheyenne Reservation
2005

	Tract Only Above High Baseline	Cumulative Impacts of Tract and High Baseline	Tract Only Above Low Baseline	Cumulative Impacts of Tract and Low Baseline
No. Housing Units That Can Accommodate Families:				
Native American Families	1	392	42	312
Non-Native American Families	17	33	11	11
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	0	1	0	0
Non-Native American Singles	5	9	3	3
Water Requirements:				
Water Flows (gpd)*	800	293900	31500	233900
Water Storage (gpd)*	1300	489800	52500	389800
Sewage Treatment Requirements (gpd):*	500	195900	21000	155900
Schools:				
No. Students in Grades 1-8[2]	7	246	29	189
No. Students in Grades 9-12[2]	2	56	7	43
No. Teachers in Grades 1-8[3]	0.5	13.5	1.5	10.5
No. Teachers in Grades 9-12[3]	0	3.0	0.5	2.5
Sq. Ft. School Space, Grades 1-8[3]	700	24600	2900	18900
Sq. Ft. School Space, Grades 9-12[3]	200	7300	900	5400
Health Care:				
No. of Physicians				
Native American	0	2.5	0.5	2.0
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	1.0	0.5	1.0
Non-Native American	0	0	0	0
No. Nurses				
Native American	0	5.0	0.5	4.0
Hospital Beds				
Native American[4]	0	8.0	1.0	6.5
Non-Native American	0.5	0.5	0	0
Ambulance Service				
Personnel	0	5.0	0	0
Vehicles	0	1.0	0	0
Law Enforcement:				
No. of Officers	0	7.5	1	6
No. of Vehicles	0	2.0	0	2
Sq. Ft. Office Space	0	750	100	600
Fire Protection:				
No. of Volunteer Officers	0	0	0	0
No. of Vehicles	0	0	0	0
Sq. Ft. Office/Storage Space	0	0	0	0
Social Services:				
No. of Social Workers				
Native American	0	4.5	0.5	3.5
Non-Native American	0	0	0	0
Population Change:				
Native American	5	1959	210	1559
Non-Native American	62	121	40	40

*gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for the Tract Only are measured against the High or Low Baseline. The cumulative impacts include the tract and the High or Low Baseline and are measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

increases. The current problems at schools attended by Reservation students such as students frequently switching between schools, high dropout rates, long commutes over poor roads, and little involvement with Northern Cheyenne culture and language would continue. Concern about Reservation schools and education of Reservation school children was frequently expressed during the Northern Cheyenne Scoping Meeting and individual interviews on the Reservation. Of particular concern is the increasing number of Reservation students attending off-Reservation schools. These concerns and problems are discussed in more detail in Chapter 4, Section 4.2.6N. Impacts to education under Low Baseline conditions are expected to be mild to moderate under Cook Mountain Tract development due to the increases in Reservation students attending Reservation and off-Reservation schools. Under High Baseline conditions, the impacts to education from the tract are expected to be insignificant.

Health Care

Table B-15 details the increase in demand for doctors, dentists, nurses, and hospital beds for Cook Mountain Tract over each of the baseline alternatives. Additional demands could also be placed on the clinic by Native Americans moving into areas adjacent to the Reservation such as St. Labre and Ashland. Additional CHS funding from IHS would have to be made available so Native Americans could receive major medical care off-Reservation. Outpatient medical services for non-Native Americans would continue to be unavailable on the Reservation. There would also be an increase in demand for alcoholism and drug abuse treatment services due to Reservation and regional population growth.

With Cook Mountain over Low Baseline conditions, ambulance coverage would be inadequate if additional personnel (See Chapter 4A, Section 4A.1.6N) were not added for the Low Baseline population. Under High Baseline conditions, ambulance service would not be significantly affected; however it would be inadequate if the additional vehicle and personnel were not added under High Baseline Alternative conditions. Increases in traffic across the Reservation due to regional population growth could also increase the demand on Reservation ambulances; this demand is not quantified.

Demand for urgent medical services, which are available to Native Americans and non-Native Americans from Lame Deer Clinic, would rise in step with the increase in population and Reservation road usage. If traffic increases cause more accidents involving Native Americans, the need for CHS funding would increase so that treatment for serious injuries could be provided off-Reservation.

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned during the Northern Cheyenne scoping process and in individual interviews on the Reservation. Mild to moderate impacts to the health care system over the Low Baseline Alternative are expected with development of the Cook Mountain Tract because of the importance of these services and the costs associated with providing them. The cumulative impacts from Cook Mountain development, when combined with the Low Baseline, would be severe. Impacts to health care from tract development over High Baseline conditions are expected to be insignificant. The types of impacts to health care on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.6N.

Law Enforcement

With Cook Mountain development over Low Baseline conditions, one additional police officer would be needed due to Reservation population growth. However, the demand figure may underestimate the real situation because, in addition to the demand created directly by Reservation population increases, the police may need to respond to more traffic accidents due to increased regional traffic passing through the Reservation; more crime associated with higher levels of alcohol and drug abuse; more trespassing due to regional population growth; and more disputes involving Native Americans and non-Native Americans, both on the Reservation and at nearby off-Reservation locations. More complete coverage to outlying areas, such as Birney Village and Ashland Village, would have to be provided. The adoption of the new legal code on the Northern Cheyenne Reservation may also increase future police work.

The already backlogged Tribal Court system (see Chapter 3, Section 3.6N) would see an increase in cases, particularly those involving credit transactions, business transactions, and alcohol and drug-related offenses, creating additional impacts the Tribe is poorly equipped to deal with. Problems with law enforcement and multiple jurisdictions particularly concern Reservation residents and were mentioned frequently at the scoping meeting and during individual interviews on the Reservation.

Mild to moderate impacts to the Reservation police and courts from Cook Mountain Tract development over the Low Baseline Alternative are expected due to the increases in demand for these service and the costs of providing the service. The cumulative impacts from Cook Mountain development, when combined with the Low Baseline, would be severe. Impacts from the tract with High Baseline conditions are expected to be mild.

Fire Protection

The population growth under Cook Mountain Tract development and the coincident potential increase in structural fires may lead to a demand for organized structural fire protection on the Reservation. This demand could mean providing vehicles in each community and increasing the number and training of volunteer firefighters. With the increased traffic on the Reservation, there may be more vehicle fires on the road system or fires adjacent to the roads caused by vehicles. Without the organized structural fire protection program, structural fire protection on the Reservation would be inadequate; any additional demand from the tract would make the situation worse.

Increases in the recreational use of the Reservation and use of the canister sites (where numerous fires have occurred, (Feeney, et al., 1986)), both due to Reservation and regional population growth, could cause more range and forest fires. If a significant increase occurred in the number of fires, the BIA Forestry Program firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these impacts with Low Baseline conditions is unknown. Under High Baseline conditions, the impact would be insignificant.

Roads

Table B-16 shows the increased use of Reservation roads with Cook Mountain Tract development over the High and Low Baselines. Traffic on U.S. 212, the major east-west road across the Northern Cheyenne Reservation, would increase 4 to 5 percent over both the High and Low Baseline conditions in 2005. When High Baseline changes are included, this figure would be 14 to 17 percent above the current situation by 2005. These estimates are based on increases in mine construction and operation commuter traffic. There would be additional traffic from indirect employees, and Reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to the mine and expanded regional business activity would also increase. However, these types of increases are very difficult to quantify.

Concerns regarding Reservation roads, particularly increases in truck traffic, the number of loaded school buses crossing the Reservation daily, and increased traffic at Lame Deer and Birney Village, were expressed at the scoping meeting and frequently during individual interviews. Mild impacts to the Reservation road system are expected due to the increased traffic and because some Reservation roads are currently in poor condition. These traffic increases would result in higher maintenance costs and more accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents.

Recreation

There would be some increased usage of recreational facilities on the Reservation under Cook Mountain Tract development due to Reservation population growth and higher usage of the Reservation by people living off-Reservation. There could also be more poaching, littering, trespassing, and conflicts over recreation resources and facility use (Feeney, et al., 1986). One half-time compliance officer, to police recreation areas, would be needed to meet the expected increase in use under both the High and Low Baselines. These impacts are expected to be mild.

TABLE B-16
INCREASES IN ROAD USE[1] — COOK MOUNTAIN TRACT
Northern Cheyenne Reservation
2005

	Tract Only Above High Baseline		Cumulative Impacts Tract and High Baseline[2,4] — 2005		Tract Only Above Low Baseline		Cumulative Impacts Tract and Low Baseline[3,4] — 2005	
	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]
West Border to Lame Deer (U.S. 212)	65	4	248	17	67	5	67	5
Lame Deer to East Border (U.S. 212)	78	4	230	14	79	5	79	5
Lame Deer to N. Border (MT 39)	6	1	81	8	6	1	6	1
Lame Deer to Birney Village	0	0	1	0	0	0	0	0
Kirby Road	35	10	199	102	35	18	35	18
Ashland Village to Birney Village	13	6	29	15	12	6	12	6

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activity) is not included.
[2] Includes Cook Mountain Tract and the High Baseline Alternative measured against current figures.
[3] Includes Cook Mountain Tract and the Low Baseline Alternative measured against current figures.
[4] Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily figure.
[5] Percent change in number of daily trips over the appropriate baseline or current situation.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

Social Services

The inmigration of Native Americans projected under Cook Mountain Tract development would pressure the already (1987) inadequately staffed Reservation social service system which provides services such as child welfare, general assistance, etc. One additional half-time social worker would be required over the Low Baseline Alternative to meet the increased population needs associated with tract development. If returning Native Americans are unable to find employment and/or if the population growth both on and off the Reservation results in increased stress on families (creating poverty and abuse situations), the demand on social services could rise at an even higher rate than expected. Impacts to social services were frequently mentioned concerns at the Northern Cheyenne Scoping Meeting and in individual interviews on the Reservation. Impacts to social services from tract development under both baselines are expected to be mild.

Other Services

On- and off-Reservation population growth as a result of Cook Mountain Tract development would lead to increasing pressures on a variety of other services such as care for the elderly and Dull Knife Memorial College in Lame Deer. Most Reservation services are currently experiencing funding shortages so it may be very difficult to expand services for a growing population. For example, Dull Knife Memorial College may see an increase in non-Native American students from off-Reservation communities such as Colstrip and Ashland; the college currently receives no funding from the state or federal government for these students. Mild impact to Dull Knife Memorial College is expected from the development of the Cook Mountain Tract because any increase in non-Native American students would put financial stress on the college.

B.8.7N Social Organization

Under the Cook Mountain Tract development, impacts to social organization would occur on the Northern Cheyenne Reservation because of the following factors: (1) migration of non-Native Americans onto the Reservation, (2) return-migration (migration back onto the Reservation by former residents) of Native Americans (including potential employees and their families) in search of the benefits of development, (3) coal-related population increases in areas directly adjacent to the Reservation (the population of the Ashland/St. Labre area can be used as an indicator), (4) regional population growth in areas such as Broadus, Miles City, Sheridan, Colstrip, Forsyth, Hardin, and Billings that are not directly adjacent to the Reservation but, nevertheless, would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for activities such as school, shopping, recreation, and (5) Native Americans (both inmigrating and current residents) would obtain direct and indirect employment in the coal mine industry resulting in an increased annual payroll to Reservation Native Americans, and (6) changes in social well-being. Table B-17 quantifies the relative changes in each of these impact factors over the High and Low Baselines in the year 2005. Under the Low Baseline Alternative, these impacts are expected to be moderate; under the High Baseline Alternative, these impacts are expected to be mild to moderate. The cumulative impacts of Cook Mountain Tract development, combined with the High or Low Baseline Alternative, would produce severe changes in Northern Cheyenne social organization.

Greater contact with non-Native Americans, both on and off-Reservation, and the return-migration of Native Americans who have lived off the Reservation would increase the diversity of ideas, values and behaviors on the Reservation. There may be more interaction between the Tribal government and county and state government as the Tribal government attempts to provide for increasing service demands. There may also be an increase in feelings of a local lack or loss of control because the decisions regarding coal development are made off-Reservation.

Conflict among Native American social groups on the Reservation would probably increase. Much of the current conflict among social groups occurs because of the perceived inequality in access to resources, such as jobs and income. These conflicts would likely increase because relatively high paying employment would be obtained by some individuals, while the effects of coal development would be felt by all.

Some changes in personal interaction may occur with increased potential for conflicts with non-Native Americans, both on the Reservation and in adjacent communities. For example, existing problems between Native Americans and non-Native Americans in Ashland would probably be exacerbated. Rapid growth is expected in the Ashland area, and Ashland may have difficulty dealing with the growth because it is an unincorporated community without a history of coordination response to development (BLM, 1984; Mountain West Research — North, 1982). The isolated community of Birney Village is vulnerable to changes in social organization caused by changes in Reservation traffic and non-Native American presence on the Reservation.

Coal development would create substantial benefits for the individual Native Americans who were able to obtain employment. Because of traditional sharing patterns, this income may benefit more people than just the families where employment occurs. An increase of 23 to 24 jobs (depending upon the baseline) is significant to a Tribe with an approximately 50 percent unemployment rate.

The types of impacts to social organization on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.7N.

B.8.8N Social Well-Being

During development associated with the Cook Mountain Tract, changes would occur in social well-being due to changes in availability of services and facilities; changes in employment and business activity; stress caused by

TABLE B-17
CHANGES [1] IN IMPACT FACTORS — SOCIAL ORGANIZATION
COOK MOUNTAIN TRACT
Northern Cheyenne Reservation
2005

Factors	High Baseline Alternative	Tract Only Over High Baseline Alt.	Low Baseline Alternative	Tract Only Over Low Baseline Alt.
Inmigration of Non-Native Americans	59	62	0	40
Return Migration of Native Americans [2]	200-250	0	0	100-150
Change in Off-Reservation Population				
Ashland/St. Labre (1987 population = 513)	262	358	0	278
Percent change	51%	46%	0	54%
Colstrip (1987 population = 1,581)	358	18	310	13
Percent change	23%	1%	20%	1%
Change in direct and indirect Native American Employment	77	24	0	23
Total annual associated payroll for Native Americans	$1,400,000	$547,350	0	$514,700
Level of impact to Reservation roads	Moderate	Mild	Mild	Mild
Level of impact to social well-being	Severe	Mild to Moderate	Moderate to Severe	Moderate

[1] Unless otherwise indicated, baseline figures are for 2005 measured against 1987; Tract figures are for 2005 measured against the High or Low Baseline.
[2] This return-migration would occur during project construction.

NOTE: Cumulative impacts can be obtained by adding leasing alternative and baseline alternative numbers together.

Source: BLM, 1987

changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. There would be mild to severe stress on Reservation facilities and services due to on-Reservation and regional population growth. The demand for housing would force the doubling or tripling of families in existing dwellings. Increases in stress on individuals associated with changes in cultural conditions and social organization, crowded housing, service/infrastructure shortfalls, and increased availability of drugs, could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. In addition, there is concern that alcohol and drug abuse affects the ability of Northern Cheyenne people to practice their traditional religion and of parents to teach their children the Cheyenne way.

Social well-being in Ashland Village would be influenced by the rapid population growth in Ashland, which may increase alcoholism and drug abuse, and conflicts between Native and non-Native Americans. Changes in the traditional, isolated, quiet nature of Birney Village would distress Birney Village residents and decrease their social well-being.

Increases in social well-being would occur to those who were able to obtain employment or benefit from business expansion as a result of the increased income on the Reservation. Employment in the coal industry and related fields would provide income to those able to obtain jobs.

It is likely that, as a whole, Tribal members would feel less well off after coal development associated with the Cook Mountain Tract. Many of the problems they see as most critical (alcohol and drug abuse, inadequate community services, unemployment and poverty, crime, lack of communication among people, family problems (Feeney, et al., 1986; BLM, 1987)) may be exacerbated by coal development. Perhaps of greater importance is the likelihood that those Northern Cheyenne who would not be able to take advantage of benefits associated with tract development would feel further deprived of economic equality. This deprivation might be relative, but it would be a very real perception to the persons who experienced it.

Changes in social well-being associated with development of the Cook Mountain Tract over the Low Baseline Alternative are expected to be moderate. These changes over the High Baseline Alternative are expected to be mild to moderate. The cumulative impacts of Cook Mountain Tract development, when combined with the High or Low Baseline Alternative, would produce severe changes in North-

ern Cheyenne social well-being. The types of impacts to social well-being on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.8N. See Appendix B, Section B.8.9N for related information on impacts to cultural conditions under this tract.

B.8.9N Cultural Conditions

Cultural impacts to the Northern Cheyenne are the same as for the Coal Creek tract (Appendix B, B.7.9N).

CROW RESERVATION

B.8.1C Employment

The change in total employment due to development of the Cook Mountain Tract would not significantly affect the economy of the Crow Reservation.

B.8.2C Population

The change in Reservation population due to development of this tract would not be significant.

B.8.3C Income

Changes in household income and business volume from development of the Cook Mountain Tract would not significantly affect the economy of the Crow Reservation.

B.8.4C Tribal Fiscal Conditions

Revenue

The development of the Cook Mountain Tract would not significantly change the amount of revenue the Crow Tribe receives.

Expenditures

Expenditure needs to provide for increased service demands on the Crow Reservation would not be significant.

B.8.5C Tribal Government

The development of the Cook Mountain Tract would not significantly affect Crow Tribal government. This is because of the distance between the tract and the Crow Reservation and the resultant insignificant changes to income, population, and employment on the Reservation.

B.8.6C Housing, Services, Infrastructure

There would be no significant impact to housing, water, sewer, solid waste, education, health care, law enforcement, fire protection, roads or recreation on the Crow Reservation from Coal Creek Tract development.

Railroads

Increases in rail traffic over existing rail lines could cause more accidents and fires along the rail beds. Changes in rail traffic due to handling coal depend on where the coal is being transported. Because of the difficulty in predicting the location of future coal purchases, the level of significance of these impacts is unknown.

B.8.7C Social Organization

There would be no significant impact to social organization on the Crow Reservation from Cook Mountain Tract development.

B.8.8C Social Well-Being

There would be no significant impact to social well-being on the Crow Reservation from Cook Mountain Tract development.

B.8.9C Cultural Conditions

Cultural impacts to the Crow are the same as for the Coal Creek tract (Appendix B, B.7.9C).

B.9 TIR No. 9 — Decker-Birney (Ashland)

Introduction

The Decker-Birney (Ashland) new mine tract is located in Powder River and Rosebud Counties, Montana. (Map B-3) It lies approximately 7 miles east of the Northern Cheyenne Reservation. The tract contains recoverable coal from the Knobloch and Sawyer coal beds.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Decker-Birney (Ashland) tract. Table B-18 provides additional information on this tract.

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be shipped and consumed in an electrical generation plant outside the Powder River Region.

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 119 million tons of federal coal would be foregone. Approximately 148.8 million dollars of federal mineral royalties would be foregone, as would an estimated 141

million dollars in state severance taxes (assuming 12.5 percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

TABLE B-18
SPECIFIC TRACT CHARACTERISTICS
Decker-Birney (Ashland)

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	1,949
State	640
Private	2,939
Total	5,528
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	119
State	56
Private	203
Total	378
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	62
Average Overburden (feet)	150
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	29.3
Percent Ash	5.4
Percent Sulfur	0.2
BTUs per Pound	8,354
Mine Life (Years)	40

Proposed Action — Leasing and Development

NORTHERN CHEYENNE RESERVATION



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The development of the Decker-Birney (Ashland) Tract would significantly affect the employment, population, household income, Tribal government, and expenditures on the Northern Cheyenne Reservation. Table B-19 shows the significant changes which would occur due to development of this tract. All changes discussed below are for the year 2005.

B.9.1N Employment

Total employment on the Northern Cheyenne Reservation due to the development of this tract would increase by 10 percent over the High Baseline Alternative and 9 percent over the Low Baseline Alternative. The increase in employment would involve workers taking jobs created both directly and indirectly by development of the Decker-Birney (Ashland) Tract. The increase in direct and indirect Native American employment would be 55 over the High Baseline Alternative and 44 over the Low Baseline Alternative.

B.9.2N Population

In 2005, the population of the Northern Cheyenne Reservation would be 5 percent higher than the High Baseline Alternative and 7 percent higher than the Low Baseline Alternative levels due to development of the Decker-Birney (Ashland) Tract. This increase would be made up of Northern Cheyenne and their families who return to the Reservation in search of employment, and those workers and their families associated with development of the Decker-Birney (Ashland) Tract who would reside on the Reservation. This population growth would be significant because of the impact of the increase on Reservation services, social organization and social well-being. For further discussion of the population-related impacts, see Appendix B, Sections B.9.6N, B.9.7N, and B.9.8N.

In addition to increases in the general population, specific communities, both on and off Reservation, would have significant population growth. On Reservation, the communities of Ashland Village and Lame Deer are expected to experience the largest population growth. Figures for these communities represent population growth associated with changes in direct and indirect employment opportunities. Because so many variables are involved, the number of Northern Cheyenne who return to the Reservation in search of employment cannot be reliably estimated down to the community level. As a result, the numbers shown in Table B-19 for Lame Deer and Ashland Village may somewhat undercount the population growth that would occur with development of the Decker-Birney (Ashland) Tract. However, returning Northern Cheyenne are included of the total Reservation population change and in the rest of the analysis. Off-Reservation, the community of Ashland/St. Labre would grow by 45 percent over the High Baseline Alternative and by 60 percent over the Low Baseline Alternative due to the development of the Decker-Birney (Ashland) Tract.

B.9.3N Income

Household income would increase by 8 percent over either the High or Low Baseline Alternative. Of the change in household income, $730,000 represents wages earned by Native Americans over the High Baseline and $630,000 over the Low Baseline Alternative. Business volume on the Reservation would not be significantly changed by development of the Decker-Birney (Ashland) Tract.

B.9.4N Tribal Fiscal Conditions

Revenue

Northern Cheyenne Tribal revenue would not be significantly affected by development of the Decker-Birney (Ashland) Tract.

Expenditures

Expenditure needs to provide for increased service demands on the Northern Cheyenne Reservation due to the development of this tract would be significant. Significant increases in capital and operating costs needed to provide adequate services for incoming population are shown in

TABLE B-19
TRACT IMPACT REPORT NO. 9 — DECKER-BIRNEY (ASHLAND) TRACT
Northern Cheyenne Reservation
2005

	Baseline		Percentage Change Over Baseline	Absolute Change Over Baseline	Baseline Levels
Employment	High		10	55	566
	Low		9	44	469
Population	High		5	324	6,384
	Low		7	354	5,720
Household Income	High		8	$1,510,000	$18,825,000
	Low		8	$1,250,000	$16,260,000
Expenditure Needs:					
Housing	High	Capital Cost	13	$2,704,000	$20,384,000
		Operating Cost	5	25,000	483,000
	Low	Capital Cost	23	3,172,000	14,040,000
		Operating Cost	7	30,000	426,000
Water/Sewer	High	Capital Cost	13	1,109,000	8,402,000
		Operating Cost	4	11,000	271,000
	Low	Capital Cost	23	1,312,000	5,801,000
		Operating Cost	5	13,000	245,000
Education	High	Capital Cost	16	462,000	2,944,000
		Operating Cost	5	243,000	4,555,000
	Low	Capital Cost	26	506,000	1,969,000
		Operating Cost	7	266,000	4,044,000
Health Care	High	Capital Cost	25	211,000	848,000
		Operating Cost	4	171,000	3,826,000
	Low	Capital Cost	44	249,000	563,000
		Operating Cost	6	201,000	3,429,000
Law Enforcement	High	Capital Cost	25	30,000	120,000
		Operating Cost	7	63,000	891,000
	Low	Capital Cost	18	17,000	93,000
		Operating Cost	9	69,000	762,000
Social Services	High	Capital Cost	22	11,000	50,000
		Operating Cost	8	22,000	270,000
	Low	Capital Cost	33	11,000	33,000
		Operating Cost	10	22,000	216,000
Fire	High	Capital Cost	0	0	0
		Operating Cost	17	4,000	24,000
	Low	Capital Cost	0	0	0
		Operating Cost	25	4,000	16,000
Solid Waste	High	Capital Cost	11	4,000	36,000
		Operating Cost	20	7,000	35,000
	Low	Capital Cost	14	4,000	28,000
		Operating Cost	33	7,000	21,000
Rural Compliance Officer	High	Capital Cost	79	30,000	38,000
		Operating Cost	33	22,000	66,000
	Low	Capital Cost	158	30,000	19,000
		Operating Cost	25	11,000	44,000
Communities With Significant Population Changes					
Northern Cheyenne Reservation:*					
Ashland Village	High		13	31	237
	Low		9	20	216
Lame Deer	High		2	31	1,347
	Low		2	23	1,271
Off-Reservation:					
Ashland/St. Labre	High		45	350	775
	Low		60	306	513

NOTE: All expenditure figures are in 1985 dollars. Actual expenditures required, in 2005 dollars, would likely be considerably higher depending on the inflation rate between 1985 and 2005. See Technical Reports 3 and 4 for information on how these expenditures were calculated.

Source: BLM, 1988

Table B-19. Further information about the level of service demand can be found in Appendix B, Section B.9.6N and in Table B-20 in that section.

B.9.5N Tribal Government

Impacts to Tribal government include more complexity in government, a need for increased coordination with other governments, and increased pressure to provide more services to members of the Northern Cheyenne Tribe. As the complexity of Tribal government increases, more Tribal programs would be handled by special committees which could make access to government by individuals more difficult. This could lead to increased feelings of alienation among Tribal members. As the population of the area near the eastern border of the Reservation increases, more jurisdictional conflicts between the Reservation and other governments could occur, creating need for increased coordination among governments. Increased economic activity due to the development of the Decker-Birney (Ashland) Tract would create more demands on Reservation services due to the return of Northern Cheyenne to the Reservation in search of employment. In conclusion, the Northern Cheyenne Tribal government would be significantly affected by development of the Decker-Birney (Ashland) Tract.

B.9.6N Housing, Services, Infrastructure

This section describes the impacts to housing, services, and infrastructure on the Northern Cheyenne Reservation due to population growth associated with the Decker-Birney (Ashland) Tract. In addition to population growth associated directly with mining and secondary employment, regional coal development is expected to stimulate a return-migration of Tribal members to the Reservation in search of employment. Inmigration of Native Americans in search of employment accounts for much of the increase in service demand from this tract. Under the Decker-Birney (Ashland) Tract, the Native American population on the Northern Cheyenne Reservation is projected to increase 6 percent over the Low Baseline Alternative and 4 percent over the High Baseline Alternative. Non-Native American increases are 9 percent over the Low Baseline and 11 percent over the High Baseline Alternative.

Tables B-19 and B-20 show the increased capital expenditures/annual operating costs and service demands on the Northern Cheyenne Reservation as a result of the Decker-Birney (Ashland) Tract. The section below briefly discusses each of the various services. The service-demand estimates and associated cost estimates in the above mentioned tables are based on changes over and above the baseline alternatives and represent providing adequate service to that increment of population change resulting from the Decker-Birney (Ashland) Tract development. A high level of concern was expressed at the Northern Cheyenne Scoping Meeting (BLM, 1987), in letters received during the scoping process and at individual interviews on the Reservation, regarding the possible impacts to Reservation services from coal development. The service-demand values presented in this section are calculated using regional service-demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. These are both described in Technical Report 3.

Housing

Demand for housing would be high under the Decker-Birney (Ashland) Tract. It is unlikely the 1988 deficiency of 420 units, combined with the demand from the High and Low Baseline Alternatives (407 and 270 houses, respectively), would be met by 2005, much less the provision of 69 or 74 homes (depending on the baseline) needed as a result of the Decker-Birney (Ashland) Tract development. Newly formed Native American families and Native Americans returning to the Reservation would probably live with friends or relatives, exacerbating the crowded conditions of existing housing units.

Concern regarding Reservation housing was frequently mentioned by Northern Cheyenne Reservation residents during the scoping meeting and in individual interviews. Impacts to Reservation housing are expected to be severe under the Decker-Birney (Ashland) Tract because of the high level of demand that would intensify current (1987) and expected inadequate baseline conditions, including crowded housing, and the high levels of expenditures that would be required to meet tract demands. The cumulative impacts from Decker-Birney (Ashland) development, when combined with either baseline, would be very severe.

Water and Sewer

The impacts on water and sewer systems from the tract depend on whether additional housing is built. Even if no additional housing were developed, the doubling or tripling of families in existing housing would probably cause existing water and sewer systems, already expected to be stressed by the baseline populations, to be further stressed to meet the needs associated with Decker-Birney (Ashland) Tract development. The additional stress would be mild to moderate. If HUD funds are obtained for housing, IHS funding would also be made available for matching sewer and water systems. It is assumed that housing acquired by non-Native Americans would either be served by existing systems or by individual wells and septic tanks.

Solid Waste

Solid waste is held at canister sites on the Reservation prior to being shipped to off-Reservation dumps. The population increase associated with development of the Decker-Birney (Ashland) Tract would require the addition of one canister on the Reservation for interim solid waste disposal. The current (1986-1987) problems with canister sites, (i.e., equipment, maintenance, personnel, high waste disposal costs, and fires) would likely continue. Impacts to solid waste disposal on the Northern Cheyenne Reservation under Decker-Birney (Ashland) Tract development would be mild if baseline alternative needs were met. Impacts would be severe if the solid waste disposal sites at Birney Village and Lame Deer were not constructed (or reconstructed), and additional canisters identified under the baseline alternatives were not provided.

TABLE B-20
CHANGES[1] IN FACILITIES/SERVICES — DECKER-BIRNEY (ASHLAND) TRACT
Northern Cheyenne Reservation

	Tract Only Above High Baseline	Cumulative Impacts of Tract and High Baseline	Tract Only Above Low Baseline	Cumulative Impacts of Tract and Low Baseline
No. Housing Units That Can Accommodate Families:				
Native American Families	51	442	61	331
Non-Native American Families	18	34	13	13
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	1	2	0	0
Non-Native American Singles	5	9	4	4
Water Requirements:				
Water Flows (gpd)*	38700	331800	45800	248100
Water Storage (gpd)*	64500	553100	76300	413500
Sewage Treatment Requirements (gpd):*	25800	221200	30500	165400
Schools:				
No. Students in Grades 1-8[2]	38	277	41	201
No. Students in Grades 9-12[2]	9	63	9	45
No. Teachers in Grades 1-8[3]	2.0	15.5	2.5	11.5
No. Teachers in Grades 9-12[3]	0.5	3.5	0.5	2.5
Sq. Ft. School Space, Grades 1-8[3]	3800	27700	4100	20100
Sq. Ft. School Space, Grades 9-12[3]	1100	7900	1100	5600
Health Care:				
No. of Physicians				
Native American	0.5	3.0	0.5	2.0
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	1.0	0.5	1.0
Non-Native American	0	0	0	0
No. Nurses				
Native American	0.5	5.5	1.0	4.5
Hospital Beds				
Native American[4]	1.0	9.0	1.0	6.5
Non-Native American	0.5	0.5	0	0
Ambulance Service				
Personnel	0	5.0	0	0
Vehicles	0	1.0	0	0
Law Enforcement:				
No. of Officers	1.0	8.5	1.5	6.5
No. of Vehicles	1	3.0	0	0
Sq. Ft. Office Space	100	850	150	650
Fire Protection:				
No. of Volunteer Officers	0	0	0	0
No. of Vehicles	0	0	0	0
Sq. Ft. Office/Storage Space	0	0	0	0
Social Services:				
No. of Social Workers				
Native American	1.0	5.5	1.0	4.0
Non-Native American	0	0	0	0
Population Change:				
Native American	258	2212	305	1654
Non-Native American	66	125	49	49

*gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for the Tract Only are measured against the High or Low Baseline. The cumulative impacts include the tract and the High or Low Baseline and are measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

ation

er High and Low Baseline conditions, there would be crease of 102 students and 112 students, respectively, e year 2005. Reservation students currently have a ty of school options available to them; see Chapter 3, on 3.6.N, for a detailed discussion of these options. e B-20 shows increased demands for teachers and ol space for Lame Deer Elementary and Busby Tribal ol if Reservation students continue to attend Reserva- schools in the 1987 proportions. See Technical Report 3 discussion of how numbers of Reservation students calculated.

rvation students attending off-Reservation schools be affected by tract development if those schools me crowded due to off-Reservation population ases. The current problems at schools attended by rvation students such as students frequently switch- etween schools, high dropout rates, long commutes poor roads, and little involvement with Northern enne culture and language would continue. Concern t Reservation schools and education of Reservation ol children was frequently expressed during the hern Cheyenne Scoping Meeting and individual views on the Reservation. Of particular concern is the asing number of Reservation students attending off- rvation schools. These concerns and problems are dis- d in more detail in Chapter 4, Section 4.2.6N. Impacts ucation are expected to be moderate under Decker- ey (Ashland) Tract development due to the increases eservation students attending Reservation and off- rvation schools.

h Care

e B-20 details the increase in demand for doctors, den- nurses, and hospital beds for Decker-Birney (Ash- Tract over each of the baseline alternatives. Addi- l demands could also be placed on the clinic by Native ricans moving into areas adjacent to the Reservation as St. Labre and Ashland. Additional CHS funding IHS would have to be made available so Native Amer- could receive major medical care off-Reservation. atient medical services for non-Native Americans d continue to be unavailable on the Reservation. There d also be an increase in demand for alcoholism and abuse treatment services due to Reservation and nal population growth.

ulance service would be adequate for Decker-Birney land) Tract if the additional vehicle and personnel added under High Baseline Alternative conditions. If ehicle and additional personnel were not added, ulance service would be inadequate. With Decker- ey (Ashland) over Low Baseline conditions, coverage d be inadequate if the additional personnel (see Chap- A, Section 4A.1.6N) were not added for the baseline lation. Increases in traffic across the Reservation due gional population growth could also increase the nd on Reservation ambulances; this demand is not tified.

Demand for urgent medical services, which are available to Native Americans and non-Native Americans from Lame Deer Clinic, would rise in step with the increase in population and Reservation road usage. If traffic increases cause more accidents involving Native Americans, the need for CHS funding would increase so that treatment for serious injuries could be provided off-Reservation.

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned during the Northern Cheyenne scoping process and in individual interviews on the Reservation. Mild to moderate impacts to the health care system are expected with Decker-Birney (Ashland) Tract development because of the importance of these services and the costs associated with providing them. The cumulative impacts from Decker-Birney (Ashland) development, when combined with either baseline, would be severe. The types of impacts to health care on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.6N.

Law Enforcement

With Decker-Birney (Ashland) Tract development, 1 to 1.5 additional police officers would be needed, (depending upon baseline conditions) due to Reservation population growth. However, the demand figures may underestimate the real situation because, in addition to the demand created directly by Reservation population increases, the police may need to respond to more traffic accidents due to increased regional traffic passing through the Reservation; more crime associated with higher levels of alcohol and drug abuse; more trespassing due to regional population growth; and more disputes involving Native Americans and non-Native Americans, both on the Reservation and at nearby off-Reservation locations. More complete coverage to outlying areas, such as Birney Village and Ashland Village, would have to be provided. The adoption of the new legal code on the Northern Cheyenne Reservation may also increase future police work.

The already backlogged Tribal Court system (see Chapter 3, Section 3.6.N) would see an increase in cases, particularly those involving credit transactions, business transactions, and alcohol and drug-related offenses, creating additional impacts the Tribe is poorly equipped to deal with. Problems with law enforcement and multiple jurisdictions are of particular concern to Reservation residents and were mentioned frequently at the scoping meeting and during individual interviews on the Reservation.

Mild to moderate impacts to the Reservation police and courts from Decker-Birney (Ashland) Tract development are expected due to the increases in demand and the costs of providing these services. The cumulative impacts from Decker-Birney (Ashland) development, when combined with either baseline, would be severe.

Fire Protection

The population growth under Decker-Birney (Ashland) Tract development and the coincident potential increase in structural fires may lead to a demand for organized struc-

tural fire protection on the Reservation. This demand could mean providing vehicles in each community and increasing the number and training of volunteer firefighters. With the increased traffic on the Reservation, there may be more vehicle fires on the road system or fires adjacent to the roads caused by vehicles. Without the organized structural fire protection program, structural fire protection on the Reservation would be inadequate; any additional demand would make the situation worse.

Increases in the recreational use of the Reservation and use of the canister sites (where numerous fires have occurred (Feeney, et al., 1986)), both due to Recreation and regional population growth, could cause more range and forest fires. If a significant increase occurred in the number of fires, the BIA Forestry Program firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these impacts is unknown.

Roads

Table B-21 shows the increased use of Reservation roads with Decker-Birney (Ashland) Tract development over the High and Low Baselines. Traffic on U.S. 212, the major east-west road across the Northern Cheyenne Reservation, would increase 7 to 8 percent over the High and Low Baseline conditions in 2005. When High Baseline changes are included, this same figures would be 18 to 20 percent above the current situation by 2005. These estimates are based on increases in mine construction and operation commuter traffic. There would be additional traffic from indirect employees, and Reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to the mine and expanded regional business activity would also increase. However, these types of increases are very difficult to quantify.

Concerns regarding Reservation roads, particularly increases in truck traffic, the number of loaded school buses crossing the Reservation daily, and increased traffic at Lame Deer and Birney Village, were expressed at the scoping meeting and frequently during individual interviews. Mild to moderate impacts to the Reservation road system are expected due to traffic increases and because some Reservation roads are currently in poor condition. These increases in road use would result in higher maintenance costs and more accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents.

Recreation

There would be some increased usage of recreational facilities on the Reservation under Decker-Birney (Ashland)

TABLE B-21
INCREASES IN ROAD USE[1] — DECKER-BIRNEY (ASHLAND) TRACT
Northern Cheyenne Reservation
2005

	Tract Only Above High Baseline		Cumulative Impacts Tract and High Baseline[2,4] — 2005		Tract Only Above Low Baseline		Cumulative Impacts Tract and Low Baseline[3,4] — 2005	
	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]
West Border to Lame Deer (U.S. 212)	118	7	301	20	107	7	107	7
Lame Deer to East Border (U.S. 212)	142	8	294	18	128	8	128	8
Lame Deer to N. Border (MT 39)	14	1	89	8	12	1	12	1
Lame Deer to Birney Village	0	0	1	0	0	0	0	0
Kirby Road	39	11	203	104	38	19	38	19
Ashland Village to Birney Village	15	7	31	16	15	8	15	8

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activity) is not included.
[2] Includes Decker-Birney (Ashland) Tract and the High Baseline Alternative measured against current figures.
[3] Includes Decker-Birney (Ashland) Tract and the Low Baseline Alternative measured against current figures.
[4] Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily figure.
[5] Percent change in number of daily trips over the appropriate baseline or current situation.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

Tract development due to Reservation population growth and higher usage of the Reservation by people living off-Reservation. There could also be more poaching, littering, trespassing, and conflicts over recreation resources and facility use (Feeney, et al., 1986). One half-time to one full-time compliance officer, to police recreation areas, would be needed to meet the expected increase in use. These impacts are expected to be mild.

Social Services

The inmigration of Native Americans projected under Decker-Birney (Ashland) Tract development would pressure the already (1987) inadequately staffed Reservation social service system which provides services such as child welfare, general assistance, etc. One additional social worker would be required over the High and Low Baseline Alternatives to meet the increased population needs associated with tract development. If returning Native Americans are unable to find employment and/or if the population growth both on and off the Reservation results in increased stress on families (creating poverty and abuse situations), the demand on social services could rise at an even higher rate than expected. Impacts to social services were frequently mentioned concerns at the Northern Cheyenne Scoping Meeting and in individual interviews on the Reservation. Impacts to social services from tract development are expected to be mild to moderate.

Other Services

On and off-Reservation population growth as a result of Decker-Birney (Ashland) Tract development would lead to increasing pressures on a variety of other services such as care for the elderly and Dull Knife Memorial College in Lame Deer. Most Reservation services are currently experiencing funding shortages so it may be very difficult to expand services for a growing population. For example, Dull Knife Memorial College may see an increase in non-Native American students from off-Reservation communities such as Colstrip and Ashland; the college currently receives no funding from the state or federal government for these students. Mild impact to Dull Knife Memorial College is expected from the development of Decker-Birney (Ashland) because any increase in non-Native American students would put financial stress on the college.

B.9.7N Social Organization

Under the Decker-Birney (Ashland) Tract development, moderate impacts to social organization would occur on the Northern Cheyenne Reservation because of the following factors: (1) migration of non-Native Americans onto the Reservation, (2) return-migration (migration back onto the Reservation by former residents) of Native Americans (including potential employees and their families) in search of the benefits of development, (3) coal-related population increases in areas directly adjacent to the Reservation (the population of the Ashland/St. Labre area can be used as an indicator), (4) regional population growth in areas such as Broadus, Miles City, Sheridan, Colstrip, Forsyth, Hardin, and Billings that are not directly adjacent to the Reservation but, nevertheless, would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for activities such as school, shopping, recreation, (5) Native Americans (both inmigrating and current residents) would obtain direct and indirect employment in the coal mine industry resulting in an increased annual payroll to Reservation Native Americans, and (6) changes in social well-being. Table B-22 quantifies the relative changes in each of these impact factors over the High and Low Baselines in the year 2005. The cumulative impacts of Decker-Birney (Ashland) Tract development, combined with either the High or Low Baseline Alternative, would produce severe changes in Northern Cheyenne social organization.

Greater contact with non-Native Americans, both on and off-Reservation, and the return-migration of Native Americans who have lived off the Reservation would increase the diversity of ideas, values and behaviors on the Reservation. There may be more interaction between the Tribal government and county and state government as the Tribal government attempts to provide for increasing service demands. There may also be an increase in feelings of a local lack or loss of control because the decisions regarding coal development are made off-Reservation.

Conflict among Native American social groups on the Reservation would probably increase. Much of the current conflict among social groups occurs because of the perceived inequality in access to resources, such as jobs and income. These conflicts would likely increase because relatively high paying employment would be obtained by some individuals, while the effects of coal development would be felt by all.

Some changes in personal interaction may occur with increased potential for conflicts with non-Native Americans, both on the Reservation and in adjacent communities. For example, existing problems between Native Americans and non-Native Americans in Ashland would probably be exacerbated. Rapid growth is expected in the Ashland area, and Ashland may have difficulty dealing with the growth because it is an unincorporated community without a history of coordinated response to development. (BLM, 1984; Mountain West Research — North, 1982). The isolated community of Birney Village is vulnerable to changes in social organization caused by changes in Reservation traffic and non-Native American presence on the Reservation.

Coal development would create substantial benefits for the individual Native Americans who were able to obtain employment. Because of traditional sharing patterns, this income may benefit more people than just the families where employment occurs. An increase of 27 to 32 jobs (depending upon the baseline) is significant to a Tribe with an approximately 50 percent unemployment rate.

The types of impacts to social organization on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.7N.

TABLE B-22
CHANGES [1] IN IMPACT FACTORS — SOCIAL ORGANIZATION
DECKER-BIRNEY (ASHLAND) TRACT
Northern Cheyenne Reservation
2005

Factors	High Baseline Alternative	Tract Only Over High Baseline Alt.	Low Baseline Alternative	Tract Only Over Low Baseline Alt.
Inmigration of Non-Native Americans	59	66	0	49
Return Migration of Native Americans [2]	200-250	75-125	0	150-200
Change in Off-Reservation Population				
Ashland/St. Labre (1987 population = 513)	262	350	0	306
Percent change	51%	45%	0	60%
Colstrip (1987 population = 1,581)	358	24	310	20
Percent change	23%	1%	20%	1%
Change in direct and indirect Native American Employment	77	32	0	27
Total annual associated payroll for Native Americans	$1,400,000	$729,800	0	$629,550
Level of impact to Reservation roads	Moderate	Mild to Moderate	Mild	Mild to Moderate
Level of impact to social well-being	Severe	Moderate	Severe to Moderate	Moderate

[1] Unless otherwise indicated, baseline figures are for 2005 measured against 1987; Tract figures are for 2005 measured against the High or Low Baseline.
[2] This return-migration would occur during project construction.

Note: Cumulative impacts can be obtained by adding leasing alternative and baseline alternative numbers together.

Source: BLM, 1987

B.9.8N Social Well-Being

During development associated with the Decker-Birney (Ashland) Tract, changes would occur in social well-being due to changes in availability of services and facilities; changes in employment and business activity; stress caused by changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. There would be mild to severe stress on Reservation facilities and services due to on-Reservation and regional population growth. The demand for housing would force doubling or tripling of families in existing dwellings. Increases in stress on individuals associated with changes in cultural conditions and social structure, crowded housing, service/infrastructure shortfalls, and increased availability of drugs, could lead to higher rates of alcoholism, drug abuse, family violence, and crime. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. In addition, there is also concern that alcohol and drug abuse affects the ability of Northern Cheyenne people to practice their traditional religion and of parents to teach their children the Cheyenne way.

Social well-being in Ashland Village would be influenced by the rapid population growth in Ashland, which may increase alcoholism and drug abuse, and conflicts between Native and non-Native Americans. Changes in the traditional, isolated, quiet nature of Birney Village would distress Birney Village residents and decrease their social well-being.

Increases in social well-being would occur to those who were able to obtain employment or benefit from business expansion as a result of the increased income on the Reservation. Employment in the coal industry and related fields would provide income to those able to obtain jobs.

It is likely that, as a whole, Tribal members would feel less well off after coal development associated with the Decker-Birney (Ashland) Tract. Many of the problems they see as most critical (alcohol and drug abuse, inadequate community services, unemployment and poverty, crime, lack of communication among people, family problems (Feeney, et al., 1986; BLM, 1987)) may be exacerbated by coal development. Perhaps of greater importance is the likelihood that those Northern Cheyenne who would not be able to take advantage of benefits associated with tract development would feel further deprived of economic equality. This deprivation might be relative, but it would be a very real perception to the persons who experienced it.

Changes in social well-being associated with development of the Decker-Birney (Ashland) Tract are expected to be moderate. The cumulative impacts of Decker-Birney (Ashland) Tract development, when combined with the High or Low Baseline Alternative, would produce severe changes in Northern Cheyenne social well-being.

The types of impacts to social well-being on the Reservation that could be created by coal development in the region, are discussed in more detail in Chapter 4, Section 4.2.8N. See Appendix B, Section B.9.9N for related information on impacts to cultural conditions under this tract.

B.9.9N Cultural Conditions

Cultural impacts to the Northern Cheyenne are the same as for the Coal Creek tract (Appendix B, B.7.9N).

CROW RESERVATION

B.9.1C Employment

The change in total employment due to development of the Decker-Birney (Ashland) Tract would not significantly affect the economy of the Crow Reservation.

B.9.2C Population

The change in Reservation population due to development of this tract would not be significant.

B.9.3C Income

Changes in household income and business volume from development of the Decker-Birney (Ashland) Tract would not significantly affect the economy of the Crow Reservation.

B.9.4C Tribal Fiscal Conditions

Revenue

The development of the Decker-Birney (Ashland) Tract would not significantly change the amount of revenue the Crow Tribe receives.

Expenditures

Expenditure needs to provide for increased service demands on the Crow Reservation roads could be significant. These service needs are discussed in Appendix B, Section B.9.6C. Expenditures for other services are not expected to be significant.

B.9.5C Tribal Government

The development of the Decker-Birney (Ashland) Tract would not significantly affect Crow Tribal government. This is because of the distance between the tract and the Crow Reservation and the resultant insignificant changes to income, population, and employment on the Reservation. However, there may be pressure on the Tribal government to address service needs as described in Appendix B, Section B.9.6C.

B.9.6C Housing, Services, Infrastructure

There would be no significant impact to housing, water, sewer, solid waste, education, health care, law enforcement, fire protection, or recreation on the Crow Reservation from Decker-Birney (Ashland) Tract development.

Roads and Railroads

With Decker-Birney (Ashland) Tract development, traffic on U.S. 212 would increase 6 percent over High and Low Baseline levels and 28 percent above current (1984 to 1986 average) levels (when combined with the High Baseline increases) by 2005. These estimates are based on increases in mine construction and operations commuter traffic. There would be additional traffic from indirect employee commuter traffic and Reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to the coal mine and expanded regional business activity would also increase. However, these types of increases are very difficult to quantify. Concern regarding Reservation roads, particularly increases in truck traffic, was expressed at the Crow Scoping Meeting (BLM, 1987) and frequently during individual interviews on the Reservation. Mild impacts to Crow Reservation roads are expected because of the traffic increases, and because part of U.S. 212 is currently in need of repair. These increases in road use could result in higher maintenance costs and more accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents.

Increases in rail traffic over existing rail lines could cause more accidents and fires along the rail beds. Changes in rail traffic due to handling coal depend on where the coal is being transported. Because of the difficulty in predicting the location of future coal purchases, the level of significance of these impacts is unknown.

B.9.7C Social Organization

There would be no significant impact to social organization on the Crow Reservation from Decker-Birney (Ashland) Tract development.

B.9.8C Social Well-Being

There would be no significant impact to social well-being on the Crow Reservation from Decker-Birney (Ashland) Tract development.

B.9.9C Cultural Conditions

Cultural impacts to the Crow are the same as for the Coal Creek Tract (Appendix B, B.7.9C).

B.10 TIR No. 10 — Northwest Otter Creek

Introduction

The Northwest Otter Creek new mine tract is located in Rosebud and Powder River Counties, Montana. (Map B-3) It lies approximately 6 miles east of the Northern Cheyenne Reservation. The tract contains one recoverable coal bed, the Knobloch, which is present in one seam.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Northwest Otter Creek tract. Table B-23 provides additional information on this tract.

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be shipped and consumed in an electrical generation plant outside the Powder River Region.

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 139 million tons of federal coal would be foregone. Approximately 173.8 million dollars of federal mineral royalties would be foregone, as would an estimated 164.7 million dollars in state severance taxes (assuming 12.5 percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

TABLE B-23
SPECIFIC TRACT CHARACTERISTICS
Northwest Otter Creek

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	1,350
State	640
Private	3,484
Total	5,474
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	139
State	62
Private	210
Total	411
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	62
Average Overburden (feet)	150
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	27.3
Percent Ash	6.2
Percent Sulfur	0.2
BTUs per Pound	8,497
Mine Life (Years)	40

Proposed Action — Leasing and Development

NORTHERN CHEYENNE RESERVATION



- WOHEHIV -
The Morning Star

The development of the Northwest Otter Creek Tract would significantly affect the employment, population, household income, Tribal government, and expenditures on the Northern Cheyenne Reservation. Table B-24 shows the significant changes which would occur due to the development of this tract. All changes discussed below are for the year 2005.

B.10.1N Employment

Total employment on the Northern Cheyenne Reservation due to development of the Northwest Otter Creek Tract, would increase by 13 percent over each of the baseline alternatives. The increase in employment would involve workers taking jobs created both directly and indirectly by development of this tract. The increase in direct and indirect Native American employment would be 38 workers over the High Baseline Alternative and 32 workers over the Low Baseline Alternative.

B.10.2N Population

In 2005, the population of the Northern Cheyenne Reservation would be 6 percent higher than the High Baseline Alternative and 7 percent higher than the Low Baseline Alternative due to the development of the Northwest Otter Creek tract. This increase would be made up of Northern Cheyenne and their families who return to the Reservation in search of employment and those workers and their families associated with development of the Northwest Otter Creek Tract who would reside on the Reservation. This population growth would be significant because of the impact of the increase on Reservation services, social organization, and social well-being. For further discussion of the population-related impacts on Reservation services, social organization, and social well-being, see Appendix B, Sections B.10.6N, B.10.7N, and B.10.8N.

In addition to increase in the Reservation population, specific communities, both on and off the Reservation, would have significant population growth. On Reservation, the communities of Lame Deer and Ashland Village are expected to experience the largest population growth. Figures for these communities represent the growth associated with changes in direct and indirect employment opportunities. Because so many variables are involved, the number of Northern Cheyenne who return to the Reservation in search of employment cannot be reliably estimated down to the community level. As a result, the numbers shown in Table B-24 for Lame Deer and Ashland Village may somewhat undercount the population growth that would occur with the development of the Northwest Otter Creek Tract. However, returning Northern Cheyenne are included in the total Reservation population change and in the rest of the analysis. Off-Reservation, the community of Ashland/St. Labre would grow by 60 percent over the High Baseline

TABLE B-24
TRACT IMPACT REPORT NO. 10 — NORTHWEST OTTER CREEK TRACT
Northern Cheyenne Reservation
2005

	Baseline		Percentage Change Over Baseline	Absolute Change Over Baseline	Baseline Levels
Employment	High		13	71	566
	Low		13	59	469
Population	High		6	357	6,384
	Low		7	383	5,720
Household Income	High		10	$1,970,000	$18,825,000
	Low		10	$1,690,000	$16,260,000
Expenditure Needs:					
Housing	High	Capital Cost	14	$2,777,000	$20,384,000
		Operating Cost	5	25,000	483,000
	Low	Capital Cost	23	3,172,000	14,040,000
		Operating Cost	7	29,000	426,000
Water/Sewer	High	Capital Cost	13	1,131,000	8,402,000
		Operating Cost	4	12,000	271,000
	Low	Capital Cost	23	1,312,000	5,801,000
		Operating Cost	5	13,000	245,000
Education	High	Capital Cost	17	508,000	2,944,000
		Operating Cost	6	267,000	4,555,000
	Low	Capital Cost	28	542,000	1,969,000
		Operating Cost	7	285,000	4,044,000
Health Care	High	Capital Cost	25	215,000	848,000
		Operating Cost	5	176,000	3,826,000
	Low	Capital Cost	44	249,000	563,000
		Operating Cost	6	203,000	3,429,000
Law Enforcement	High	Capital Cost	29	35,000	120,000
		Operating Cost	8	69,000	891,000
	Low	Capital Cost	18	17,000	93,000
		Operating Cost	10	74,000	762,000
Social Services	High	Capital Cost	22	11,000	50,000
		Operating Cost	8	22,000	270,000
	Low	Capital Cost	33	11,000	33,000
		Operating Cost	10	22,000	216,000
Fire	High	Capital Cost	0	0	0
		Operating Cost	17	4,000	24,000
	Low	Capital Cost	0	0	0
		Operating Cost	31	5,000	16,000
Solid Waste	High	Capital Cost	11	4,000	36,000
		Operating Cost	20	7,000	35,000
	Low	Capital Cost	14	4,000	28,000
		Operating Cost	33	7,000	21,000
Rural Compliance Officer	High	Capital Cost	79	30,000	38,000
		Operating Cost	33	22,000	66,000
	Low	Capital Cost	158	30,000	19,000
		Operating Cost	50	22,000	44,000
Communities With Significant Population Changes					
Northern Cheyenne Reservation:*					
Ashland Village	High		24	56	237
	Low		18	38	216
Lame Deer	High		3	38	1,347
	Low		3	32	1,271
Off-Reservation:					
Ashland/St. Labre	High		60	468	775
	Low		80	406	513

NOTE: All expenditure figures are in 1985 dollars. Actual expenditures required, in 2005 dollars, would likely be considerably higher depending on the inflation rate between 1985 and 2005. See Technical Reports 3 and 4 for information on how these expenditures were calculated.

Source: BLM, 1988

Alternative and by 80 percent over the Low Baseline Alternative due to the development of the Northwest Otter Creek Tract.

B.10.3N Income

Household income would increase by 10 percent over either the High or Low Baseline Alternatives. Of the change in household income, $863,000 represent wages earned by Native Americans over the High Baseline and $746,000 over the Low Baseline Alternative. Business volume on the Reservation would not be significantly changed by development of the Northwest Otter Creek Tract.

B.10.4N Tribal Fiscal Conditions

Revenue

Tribal revenue would not be significantly affected by the development of the Northwest Otter Creek Tract.

Expenditures

Expenditure needs to provide for increased service demands on the Northern Cheyenne Reservation due to the development of this tract would be significant. Significant increases in capital and operating costs needed to provide adequate services for income population are shown in Table B-24. Further information about the level of service demand can be found in Appendix B, Section B.10.6N and in Table B-25.

B.10.5N Tribal Government

Impacts to Tribal government include more complexity in government, a need for increased coordination with other governments, and increased pressure to provide more services to members of the Northern Cheyenne Tribe. As the complexity of Tribal government increases, more Tribal programs would be handled by special committees which could make access to government by individuals more difficult. This could lead to increased feelings of alienation among Tribal members. As the population of the area near the eastern border of the Reservation increases, more jurisdictional conflicts between the Reservation and other governments could occur, creating need for increased coordination between governments. Increased economic activity due to development of the Northwest Otter Creek Tract would create more demands on Reservation services due to the return of Northern Cheyenne to the Reservation in search of employment. In conclusion, the Northern Cheyenne Tribal government would be significantly affected by development of the Northwest Otter Creek Tract.

B.10.6N Housing, Services, Infrastructure

This section describes the impacts to housing, services, and infrastructure on the Northern Cheyenne Reservation due to population growth associated with the Northwest Otter Creek Tract. In addition to population growth associated directly with mining and secondary employment, regional coal development is expected to stimulate a return-migration of Tribal members to the Reservation in search of employment. Inmigration of Native Americans in search of employment accounts for much of the increase in service demand from this tract. Under the Northwest Otter Creek Tract, the Native American population on the Northern Cheyenne Reservation is projected to increase 6 percent over the Low Baseline Alternative and 5 percent over the High Baseline Alternative. Non-Native American increases are 14 percent over the Low Baseline and 15 percent over the High Baseline Alternative.

Tables B-24 and B-25 show the increased capital expenditures/annual operating costs and service demands on the Northern Cheyenne Reservation as a result of the Northwest Otter Creek Tract. The section below briefly discusses each of the various services. The service-demand estimates and associated cost estimates in the above mentioned tables are based on changes over and above the baseline alternatives and represent providing adequate service to that increment of population change resulting from the Northwest Otter Creek Tract development. A high level of concern was expressed at the Northern Cheyenne Scoping Meeting (BLM, 1987), in letters received during the scoping process and at individual interviews on the Reservation regarding the possible impacts to Reservation services from coal development. The service-demand values presented in this section are calculated using regional service-demand coefficients that have been adapted for the Reservation; the expenditure values were calculated using regional and/or Reservation cost estimators. Those are both described in Technical Report 3.

Housing

Demand for housing would be high under the Northwest Otter Creek Tract. It is unlikely the 1988 deficiency of 420 units, combined with the demand from the High and Low Baseline Alternatives (407 and 270 houses, respectively), would be met by 2005, much less the provision of 77 or 82 homes (depending on the baseline) needed as a result of the Northwest Otter Creek Tract development. Newly formed Native American families and Native Americans returning to the Reservation would probably live with friends or relatives, exacerbating the crowded conditions of existing housing units.

It is assumed that the limited number of housing units available on the Reservation, coupled with difficulty in obtaining housing sites, would restrict the number of non-Native American families settling on the Reservation. The demand for family housing on the Reservation would exceed supply. Technical Report 4 describes how housing availability was calculated. Based on these calculations, family housing supply would exceed demand only for Northwest Otter Tract over the High Baseline Alternative because some of the housing supply was used by High Baseline Alternative development.

Concern regarding Reservation housing was frequently mentioned by Northern Cheyenne Reservation residents during the scoping meeting and in individual interviews. Impacts to Reservation housing are expected to be severe under the Northwest Otter Creek Tract because of the high

TABLE B-25
CHANGES[1] IN FACILITIES/SERVICES — NORTHWEST OTTER CREEK TRACT
Northern Cheyenne Reservation

	Tract Only Above High Baseline	Cumulative Impacts of Tract and High Baseline	Tract Only Above Low Baseline	Cumulative Impacts of Tract and Low Baseline
No. Housing Units That Can Accommodate Families:				
Native American Families	52	443	61	331
Non-Native American Families	25	41	21	21
No. Housing Units That Can Accommodate Single Workers:				
Native American Singles	1	2	0	0
Non-Native American Singles	8	12	6	6
Water Requirements:				
Water Flows (gpd)*	39500	332600	45800	248100
Water Storage (gpd)*	56800	545300	76300	413500
Sewage Treatment Requirements (gpd):*	26300	221700	30500	165400
Schools:				
No. Students in Grades 1-8[2]	41	280	44	204
No. Students in Grades 9-12[2]	9	63	10	46
No. Teachers in Grades 1-8[3]	2.5	16.0	2.5	11.5
No. Teachers in Grades 9-12[3]	0.5	3.5	0.5	2.5
Sq. Ft. School Space, Grades 1-8[3]	4100	28000	4400	20400
Sq. Ft. School Space, Grades 9-12[3]	1100	7900	1300	5800
Health Care:				
No. of Physicians				
Native American	0.5	3.0	0.5	2.0
Non-Native American	0	0	0	0
No. Dentists				
Native American	0	1.0	0.5	1.0
Non-Native American	0	0	0	0
No. Nurses				
Native American	0.5	5.5	1.0	4.5
Hospital Beds				
Native American[4]	1.0	9.0	1.0	6.5
Non-Native American	0.5	0	0.5	0.5
Ambulance Service				
Personnel	0	5	0	0
Vehicles	0	1	0	0
Law Enforcement:				
No. of Officers	1.5	9.0	1.5	6.5
No. of Vehicles	1	3	0	0
Sq. Ft. Office Space	150	900	150	650
Fire Protection:				
No. of Volunteer Officers	0	0	0	0
No. of Vehicles	0	0	0	0
Sq. Ft. Office/Storage Space	0	0	0	0
Social Services:				
No. of Social Workers				
Native American	1.0	5.5	1.0	4.0
Non-Native American	0	0	0	0
Population Change:				
Native American	263	2217	305	1654
Non-Native American	94	153	78	78

***gpd = gallons per day. These figures refer to demand created by Native Americans only.

[1] Changes for the Tract Only are measured against the High or Low Baseline. The cumulative impacts include the tract and the High or Low Baseline and are measured against 1987.
[2] Students who would attend Lame Deer Elementary and Busby Tribal School.
[3] These figures refer only to Lame Deer Elementary and Busby Tribal School.
[4] Half of the hospital beds for Native Americans would be provided at the Crow Agency Hospital and half at regional hospitals.

Note: The number .5 indicates a halftime position. See Technical Reports 3 and 4 for an explanation of how these numbers were calculated.

Source: BLM, 1988

level of demand that would intensify current (1987) and expected baseline inadequate conditions, including crowded housing, and the high levels of expenditures that would be required to meet tract demands. The cumulative impacts from Northwest Otter Creek development, when combined with either baseline, would be very severe.

Water and Sewer

The impacts on water and sewer systems from the leasing alternatives depend on whether additional housing is built. Even if no additional housing were developed, the doubling or tripling of families in existing housing would probably cause existing water and sewer systems, already expected to be stressed by the baseline populations, to be further stressed to meet the needs associated with Northwest Otter Creek Tract development. The additional stress would be mild to moderate. If HUD funds are obtained for housing, IHS funding would also be made available for matching sewer and water systems. It is assumed that housing acquired by non-Native Americans would either be served by existing systems or by individual wells and septic tanks.

Solid Waste

Solid waste is held at canister sites on the Reservation prior to being shipped to off-Reservation dump sites. The population increase associated with development of the Northwest Otter Creek Tract would require the addition of one canister on the Reservation for interim solid waste disposal. The current (1986-1987) problems with canister sites, (i.e., equipment, maintenance, personnel, high waste disposal costs, and fires) would likely continue. Impacts to solid waste disposal on the Northern Cheyenne Reservation under Northwest Otter Creek Tract development would be mild if baseline alternative needs were met. However, impacts would be severe if the solid waste disposal sites at Birney Village and Lame Deer were not constructed (or reconstructed), and additional canisters identified under the baseline alternatives were not provided.

Education

Under High and Low Baseline conditions, there would be an increase of 113 students and 120 students, respectively, in the year 2005. Reservation students currently have a variety of school options available to them; see Chapter 3, Section 3.6.N, for a detailed discussion of these options. Table B-25 shows increased demands for teachers and school space for Lame Deer Elementary and Busby Tribal School if Reservation students continue to attend Reservation schools in the 1987 proportions. See Technical Report 3 for a discussion of how numbers of Reservation students were calculated.

Reservation students attending off-Reservation schools may be affected by tract development if those schools become crowded due to off-Reservation population increases. The current problems at schools attended by Reservation students such as students frequently switching between schools, high dropout rates, long commutes over poor roads, and little involvement with Northern Cheyenne culture and language would continue. Concern about Reservation schools and education of Reservation school children was frequently expressed during the Northern Cheyenne Scoping Meeting and individual interviews on the Reservation. Of particular concern is the increasing number of Reservation students attending off-Reservation schools. These concerns and problems are discussed in more detail in Chapter 4, Section 4.2.6N. Impacts to education are expected to be moderate under Northwest Otter Creek Tract development due to the increases in Reservation students attending Reservation and off-Reservation schools.

Health Care

Table B-25 details the increase in demand for doctors, dentists, nurses, and hospital beds for Northwest Otter Creek Tract over each of the baseline alternatives. Additional demands could also be placed on the clinic by Native Americans moving into areas adjacent to the Reservation such as St. Labre and Ashland. Additional CHS funding from IHS would have to be made available so Native Americans could receive major medical care off-Reservation. Outpatient medical services for non-Native Americans would continue to be unavailable on the Reservation. There would also be an increase in demand for alcoholism and drug abuse treatment services due to Reservation and regional population growth.

Ambulance Service would be adequate for Northwest Otter Creek Tract if the additional vehicle and personnel were added under High Baseline Alternative conditions. If the vehicle and additional personnel were not added, ambulance service would be inadequate. Under Northwest Otter Creek over Low Baseline conditions, coverage would be inadequate if the additional personnel were not added (see Chapter 4A, Section 4A.1.6N). Increases in traffic across the Reservation due to regional population growth could also increase the demand on Reservation ambulances; this demand is not quantified.

Demand for urgent medical services, which are available to Native Americans and non-Native Americans from Lame Deer Clinic, would rise in step with the increase in population and Reservation road usage. If traffic increases cause more accidents involving Native Americans, the need for CHS funding would increase so that treatment for serious injuries could be provided off-Reservation.

Concern for health care problems and services, particularly drug and alcohol abuse problems and services, were frequently mentioned during the Northern Cheyenne scoping process and in individual interviews on the Reservation. Mild to moderate impacts to the health care system are expected with Northwest Otter Creek Tract development because of the importance of these services and the costs associated with providing them. The cumulative impacts from Northwest Otter Creek development, when combined with either baseline, would be severe. The types of impacts to health care on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.6N.

Law Enforcement

With Northwest Otter Creek Tract development, 1.5 additional police officers would be needed due to Reservation population growth. However, the demand figures may

underestimate the real situation because, in addition to the demand created directly by Reservation population increases, the police may need to respond to more traffic accidents due to increased regional traffic passing through the Reservation; more crime associated with high levels of alcohol and drug abuse; more trespassing due to regional population growth, and more disputes involving Native Americans and non-Native Americans, both on the Reservation and at nearby off-Reservation locations. More complete coverage to outlying areas, such as Birney Village and Ashland Village, would have to be provided. The adoption of the new legal code on the Northern Cheyenne Reservation may also increase future police work.

The already backlogged Tribal Court system (see Chapter 3, Section 3.6N) would see an increase in cases, particularly those involving credit transactions, business transactions, and alcohol and drug-related offenses, creating additional impacts the Tribe is poorly equipped to deal with. Problems with law enforcement and multiple jurisdictions are of particular concern to Reservation residents and were mentioned frequently at the scoping meeting and during individual interviews on the Reservation.

Mild to moderate impacts to the Reservation police and courts from Northwest Otter Creek Tract development are expected due to the increases in demand for these services and the costs of providing these services. The cumulative impact from Northwest Otter Creek development, when combined with either baseline, would be severe.

Fire Protection

The population growth under Northwest Otter Creek Tract development and the coincident potential increase in structural fires may lead to a demand for organized structural fire protection on the Reservation. This demand could mean providing vehicles in each community and increasing the number and training of volunteer firefighters. With the increased traffic on the Reservation, there may be more vehicle fires on the road system or fires adjacent to the roads caused by vehicles. Without the organized structural fire protection program, structural fire protection on the Reservation would be inadequate; any additional demand would make the situation worse.

Increases in the recreational use of the Reservation and use of the canister sites (where numerous fires have occurred (Feeney, et al., 1986)), both due to Reservation and regional population growth, could cause more range and forestry fires. If a significant increase occurred in the number of fires, the BIA Forestry Program firefighting staff and equipment would need to be increased and/or improved. Because of the difficulty in quantifying the number of fires, the level of significance of these impacts is unknown.

Roads

Table B-26 shows the increased use of Reservation roads with Northwest Otter Creek Tract development over the High and Low Baselines. Traffic on U.S. 212, the major east-west road across the Northern Cheyenne Reservation, would increase 5 to 7 percent over the High and Low Baseline conditions in 2005. When High Baseline changes are included, this figure would be 16 to 18 percent above the current situation by 2005. These estimates are based on increases in mine construction and operation commuter traffic. There would be additional traffic from indirect employees and Reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to the mine and expanded regional business activity would also increase. However, these types of increases are very difficult to quantify.

Concerns regarding Reservation roads, particularly increases in truck traffic, the number of loaded school buses crossing the Reservation daily, and increased traffic at Lame Deer and Birney Village, were expressed at the scoping meeting and frequently during individual interviews. Mild to moderate impacts to the Reservation road system are expected due to traffic increases and because some Reservation roads are currently in poor condition. These increases in road use would result in higher maintenance costs and more accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents.

Recreation

There would be some increased usage of recreational facilities on the Reservation under Northwest Otter Creek Tract development due to Reservation population growth and higher usage of the Reservation by people living off-Reservation. There could also be more poaching, littering, trespassing, and conflicts over recreation resources and facility use (Feeney, et al., 1986). One compliance officer, to police recreation areas, would be needed to meet the expected increase in use under both the High and Low Baselines. These impacts are expected to be mild.

Social Services

The inmigration of Native Americans projected under Northwest Otter Creek Tract development would pressure the already (1987) inadequately staffed Reservation social service system which provides services such as child welfare, general assistance, etc. One additional social worker would be required over the High and Low Baseline Alternatives to meet the increased population needs associated with tract development. If returning Native Americans are unable to find employment and/or if the population growth both on and off the Reservation results in increased stress on families (creating poverty and abuse situations), the demand on social services could rise at an even higher rate than expected. Impacts to social services were frequently mentioned concerns at the Northern Cheyenne Scoping Meeting and in individual interviews on the Reservation. Impacts to social services from tract development are expected to be mild to moderate.

Other Services

On- and off-Reservation population growth as a result of Northwest Otter Creek Tract development would lead to increasing pressures on a variety of other services such as care for the elderly and Dull Knife Memorial College in Lame Deer. Most Reservation services are currently expe-

TABLE B-26
INCREASES IN ROAD USE[1] — NORTHWEST OTTER CREEK TRACT
Northern Cheyenne Reservation
2005

	Tract Only Above High Baseline		Cumulative Impacts Tract and High Baseline[2,4] — 2005		Tract Only Above Low Baseline		Cumulative Impacts Tract and Low Baseline[3,4] — 2005	
	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]	No. of Daily Trips	%[5]
West Border to Lame Deer (U.S. 212)	78	5	261	18	80	5	80	5
Lame Deer to East Border (U.S. 212)	105	6	257	16	106	7	106	7
Lame Deer to N. Border (MT 39)	16	1	91	8	15	1	15	1
Lame Deer to Birney Village	0	0	1	0	0	0	0	0
Kirby Road	5	1	169	86	5	3	5	3
Ashland Village to Birney Village	2	1	18	9	2	1	2	1

[1] Increases in road use are calculated for mine construction and operation commuters only. It is assumed direct workers carpool two to a vehicle and make one round trip per day. Traffic due to indirect worker commuting, Reservation and regional population increases (for shopping, school, recreation, etc.) and commercial truck traffic (due to the mine and expanded regional business activity) is not included.
[2] Includes Northwest Otter Creek Tract and the High Baseline Alternative measured against current figures.
[3] Includes Northwest Otter Creek Tract and the Low Baseline Alternative measured against current figures.
[4] Current figures are a 1984, 1985, and 1986 daily average except Lame Deer to Birney Village which is a 1986 and 1987 daily average and Ashland Village to Birney Village which is a 1979 daily figure.
[5] Percent change in number of daily trips over the appropriate baseline or current situation.

Source: Feeney, et al., 1986; MT Department of Highways, 1988; BLM, 1988

riencing funding shortages so it may be very difficult to expand services for a growing population. For example, Dull Knife Memorial College may see an increase in non-Native American students from off-Reservation communities such as Colstrip and Ashland; the college currently receives no funding from the state or federal government for these students. Mild impact to Dull Knife Memorial College is expected from the development of Northwest Otter Creek Tract because any increase in non-Native American students would put financial stress on the college.

B.10.7N Social Organization

Under the Northwest Otter Creek Tract development, moderate impacts to social organization would occur on the Northern Cheyenne Reservation because of the following factors: (1) migration of non-Native Americans onto the Reservation, (2) return-migration (migration back onto the Reservation by former residents) of Native Americans (including potential employees and their families) in search of the benefits of development, (3) coal-related population increases in areas directly adjacent to the Reservation (the population of the Ashland/St. Labre area can be used as an indicator), (4) regional population growth in areas such as Broadus, Miles City, Sheridan, Colstrip, Forsyth, Hardin, and Billings that are not directly adjacent to the Reservation but, nevertheless, would increase the amount of traffic across the Reservation and change the environment that Reservation Native Americans encounter when they travel off the Reservation for activities such as shopping, school, recreation, (5) Native Americans (both inmigrating and current residents) would obtain direct and indirect employment in the coal mine industry resulting in an increased annual payroll to Reservation Native Americans, and (6) changes in social well-being. Table B-27 quantifies the relative changes in each of these impact factors over the High and Low Baselines in the year 2005. The cumulative impacts of Northwest Otter Creek Tract development, combined with either the High or Low Baseline Alternative, would produce severe changes in Northern Cheyenne social organization.

Greater contact with non-Native Americans, both on and off-Reservation, and the return-migration of Native Americans who have lived off the Reservation would increase the diversity of ideas, values and behaviors on the Reservation. There may be more interaction between the Tribal government and county and state government as the Tribal government attempts to provide for increasing service demands. There may also be an increase in feelings of a local lack or loss of control because the decisions regarding coal development are made off-Reservation.

TABLE B-27
CHANGES [1] IN IMPACT FACTORS — SOCIAL ORGANIZATION
NORTHWEST OTTER CREEK TRACT
Northern Cheyenne Reservation
2005

Factors	High Baseline Alternative	Tract Only Over High Baseline Alt.	Low Baseline Alternative	Tract Only Over Low Baseline Alt.
Inmigration of Non-Native Americans	59	94	0	78
Return Migration of Native Americans [2]	200-250	75-125	0	150-200
Change in Off-Reservation Population				
Ashland/St. Labre (1987 population = 513)	262	468	0	406
Percent change	51%	60%	0	79%
Colstrip (1987 population = 1,581)	358	29	310	25
Percent change	23%	2%	20%	1%
Change in direct and indirect Native American Employment	77	38	0	32
Total annual associated payroll for Native Americans	1,400,000	$862,700	0	$745,550
Level of Impact to Reservation Roads	Moderate	Mild to Moderate	Mild	Mild to Moderate
Level of Impact to Social Well-being	Severe	Moderate	Moderate to Severe	Moderate

[1] Unless otherwise indicated, Baseline figures are for 2005 measured against 1987; Tract figures are for 2005 measured against the High or Low Baseline.
[2] This return-migration would occur during project construction.

NOTE: Cumulative impacts can be obtained by adding leasing alternative and baseline alternative numbers together.

Source: BLM, 1987

Conflict among Native American social groups on the Reservation would probably increase. Much of the current conflict among social groups occurs because of the perceived inequality in access to resources, such as jobs and income. These conflicts would likely increase because relatively high paying employment would be obtained by some individuals, while the effects of coal development would be felt by all.

Some changes in personal interaction may occur with increased potential for conflicts with non-Native Americans, both on the Reservation and in adjacent communities. For example, existing problems between Native Americans and non-Native Americans in Ashland would probably be exacerbated. Rapid growth is expected in the Ashland area, and Ashland may have difficulty dealing with the growth because it is an unincorporated community without a history of coordinated response to development (BLM, 1984; Mountain West Research — North, 1982). The isolated community of Birney is vulnerable to changes in social organization caused by changes in Reservation traffic and non-Native American pressure on the Reservation.

Coal development would create substantial benefits for the individual Native Americans who were able to obtain employment. Because of traditional sharing patterns, this income may benefit more people than just the families where employment occurs. An increase of 32 to 38 jobs (depending upon the baseline) is significant to a Tribe with an approximately 50 percent unemployment rate.

The types of impacts to social well being on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.8N.

B.10.8N Social Well-Being

During development associated with the Northwest Otter Creek Tract, changes would occur in social well-being due to changes in availability of services and facilities; changes in employment and business activity; stress caused by changes in Reservation social organization and increases in social conflicts; changes in cultural conditions; changes in access to resources; and changes in perceptions. There would be mild to severe stress on Reservation facilities and services due to on-Reservation and regional population growth. The demand for housing would force the doubling or tripling of families in existing dwellings. Increased stress on individuals associated with changes in cultural conditions and social structure, crowded housing, service/infrastructure shortfalls, and increased availability of drugs, could lead to higher rates of

alcoholism, drug abuse, family violence, and crime. Increases in alcoholism and drug abuse could lead to more alcohol-related diseases, suicides and other violent behaviors, accidents, and crime. In addition, there is also concern that alcohol and drug abuse affects the ability of Northern Cheyenne people to practice their traditional religion and of parents to teach their children the Cheyenne way.

Social well-being in Ashland Village would be influenced by the rapid population growth in Ashland, which may result in increases in alcoholism and drug abuse, and conflicts between Native and non-Native Americans. Changes in the traditional, isolated, quiet nature of Birney Village would distress Birney Village residents and decrease their social well-being.

Increases in social well-being would occur to those who were able to obtain employment or benefit from business expansion as a result of the increased income on the Reservation. Employment in the coal industry and related fields would provide income to those able to obtain jobs.

It is likely that, as a whole, Tribal members would feel less well off after coal development associated with the Northwest Otter Creek Tract. Many of the problems they see as most critical (alcohol and drug abuse, inadequate community services, unemployment and poverty, crime, lack of communication among people, family problems (Feeney, et al., 1986; BLM, 1987)) may be exacerbated by coal development. Perhaps of greater importance is the likelihood that those Northern Cheyenne who would not be able to take advantage of benefits associated with tract development would feel further deprived of economic equality. This deprivation might be relative, but it would be a very real perception to the persons who experienced it.

Changes in social well-being associated with development of the Northwest Otter Creek Tract are expected to be moderate. The cumulative impacts of Northwest Otter Creek Tract development, when combined with the High or Low Baseline Alternative, would produce severe changes in Northern Cheyenne social well-being. The types of impacts to social organization on the Reservation that could be created by coal development in the region are discussed in more detail in Chapter 4, Section 4.2.7N. See Appendix B, Section B.10.9N, for related information on impacts to cultural conditions under this tract.

B.10.9N Cultural Conditions

The cultural impacts to the Northern Cheyenne are the same as for the Coal Creek Tract (Appendix B, B.7.9N.)

CROW RESERVATION

B.10.1C Employment

The change in total employment due to development of the Northwest Otter Creek Tract would not significantly affect the economy of the Crow Reservation.

B.10.2C Population

The change in Reservation population due to development of this tract would not be significant.

B.10.3C Income

Changes in household income and business volume from development of the Northwest Otter Creek Tract would not significantly affect the economy of the Crow Reservation.

B.10.4C Tribal Fiscal Conditions

Revenue

The development of the Northwest Otter Creek Tract would not significantly change the amount of revenue the Crow Tribe receives.

Expenditures

Expenditure needs to provide for increased service demands on the Crow Reservation roads could be significant. These service needs are discussed in Appendix B, Section B.10.6C. Expenditures for other services are not expected to be significant.

B.10.5C Tribal Government

The development of the Northwest Otter Creek Tract would not significantly affect Crow Tribal government. This is because of the distance between the tract and the Crow Reservation and the resultant insignificant changes to income, population, and employment on the Reservation. However, there may be pressure on the Tribal government to address service needs as described in Appendix B, Section B.10.6C.

B.10.6C Housing, Services, Infrastructure

There would be no significant impact to housing, water, sewer, solid waste, education, health care, law enforcement, fire protection, or recreation on the Crow Reservation from Northwest Otter Creek Tract development.

Roads and Railroads

With Northwest Otter Creek Tract development, traffic on U.S. 212 would increase 5 to 6 percent over High and Low Baseline levels and 28 percent above current (1984 to 1986 average) levels (when combined with the High Baseline increases) by 2005. These estimates are based on increases in mine operations and construction commuter traffic. There would be additional traffic from indirect employees and Reservation and regional population travel for activities such as shopping, attending school, recreation, etc. Commercial truck traffic due to the coal mine and expanded regional business activity, would also increase. However, these types of increases are very difficult to quantify. Concern regarding Reservation roads, particularly increases in truck traffic, was expressed at the Crow Scoping Meeting (BLM, 1987) and frequently during individual interviews on the Reservation. Mild impacts to Crow Reservation roads are expected because of the traffic

increases, and because part of U.S. 212 is currently in need of repair. These increases in road use could result in higher in maintenance costs and more accidents, and the possible use of Reservation fire, police, ambulance, and emergency medical services to deal with accidents.

Increases in rail traffic over existing rail lines could cause more accidents and fires along the rail beds. Changes in rail traffic due to handling coal depend on where the coal is being transported. Because of the difficulty in predicting the location of future coal purchases, the level of significance of these impacts is unknown.

B.10.7C Social Organization

There would be no significant impact to social organization on the Crow Reservation from Northwest Otter Creek Tract development.

B.10.8C Social Well-Being

There would be no significant impact to social well-being on the Crow Reservation from Northwest Otter Creek Tract development.

B.10.9C Cultural Conditions

Cultural impacts to the Crow are the same for as the Coal Creek Tract (Appendix B, B.7.9C)

TABLE B-28
SPECIFIC TRACT CHARACTERISTICS
Southwest Otter Creek

Type:	
Surface Mine/Truck Shovel Operation	
Coal Acreage:	
Federal (Unleased)	1,821
State	1,185
Private	4,344
Total	7,350
Recoverable Coal Reserves (Millions of Tons):	
Federal (Unleased)	130
State	50
Private	219
Total	399
Coal Data: (from Tract Profile Summary)	
Average Coal Thickness (feet)	40
Average Overburden (feet)	150
Coal Rank	Subbituminous
Percent Recovery	90
Proximate Coal Analysis	
Percent Moisture	30.3
Percent Ash	3.9
Percent Sulfur	0.3
BTUs per Pound	8,194
Mine Life (Years)	40

B.11 TIR No. 11 — Southwest Otter Creek

Introduction

The Southwest Otter Creek new mine tract is located in Powder River County, Montana. (Map B-3) It lies approximately 6 miles east of the Northern Cheyenne Reservation. The tract contains three recoverable coal beds, the Knobloch, the Sawyer, and the Nance, which are present in multiple seams.

The coal deposit occurs in the top part of the Fort Union Formation (Paleocene), which comprises approximately 3,000 feet of sandstones, shales, siltstones, and coal seams. The formation occurs in nearly flat-lying beds. The coal is subbituminous in rank and has a density of 1,770 tons per acre-foot. There are no known geologic hazards to surface mining in the Southwest Otter Creek tract. Table B-28 provides additional information on this tract.

The tract would be a surface mine using draglines, electric shovels, dump trucks, loaders, scrapers, and other support equipment. The coal would be mined to a depth of 200 feet or until the limiting stripping ratio (6:1) has been reached. The coal would be shipped and consumed in an electrical generation plant outside the Powder River Region.

No Action Alternative

The No Action Alternative would result in no federal leasing of this tract and, consequently, no disruption of the natural land surface. Under this alternative, approximately 130 million tons of federal coal would be foregone. Approximately 162.5 million dollars of federal mineral royalties would be foregone, as would an estimated 154 million dollars in state severance taxes (assuming 12.5 percent federal royalty rate, $10/ton FOB price, and 15 percent state coal severance tax rate).

Proposed Action — Leasing and Development

NORTHERN CHEYENNE RESERVATION



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The Morning Star

The economic and social impacts to the Northern Cheyenne Reservation from development of the Southwest Otter Creek Tract would be the same as those associated with the Northwest Otter Creek Tract. See Appendix B, Sections B.10.1N through B.10.9N for a discussion of these impacts.

B.11.9N Cultural Conditions

The cultural impacts for the Northern Cheyenne are the same for the Coal Creek Tract (Appendix B, B.7.9N).

CROW RESERVATION

The economic and social impacts to the Crow Reservation from development of the Southwest Otter Creek Tract would be the same as those associated with the Northwest Otter Creek Tract. See Appendix B, Sections B.10.1C through B.10.9C for a discussion of these impacts.

B.11.9C Cultural Conditions

Cultural impacts to the Crow are the same for the Coal Creek Tract (Appendix B, B.7.9C).

B.12 Mitigation

The mitigation measures that are discussed in Chapter 4, Section 4.3, are applicable to individual tracts as well. See that section for the full array of social, economic, and cultural mitigation by type of impact. See Appendix C-2 for complete text of cultural mitigation measures.

APPENDIX C-1

NORTHERN CHEYENNE TRIBE'S PROPOSED STIPULATIONS

The following is the text of suggested stipulations submitted to the BLM by the Northern Cheyenne Tribe.

MITIGATION MEASURE I

Employment Preference

Historically, the Northern Cheyenne have been deprived of equal opportunity to participate in off-Reservation work force. An employment preference will counteract this and assure that the employment benefits of development will reach Northern Cheyenne and their families.

The appropriateness of an employment preference has been demonstrated at the Colstrip Powerplant Project. There, an employment preference has—for the first time—achieved the employment of significant numbers of Northern Cheyenne at Colstrip. We believe that the Montana Power Company would confirm that, on the basis of this preference, the Northern Cheyenne have established an admirable employment record which has served the Project well. However, this preference exists only because it was imposed on the Montana Power Company as part of a settlement of litigation brought by the Tribe against the project to protect the Reservation's Class I air quality standard. Similarly, other projects, such as those arising from the second Powder River Sale, will not adopt an employment preference unless compelled to do so.

It is the current perception of the Tribe that encirclement by large-scale coal development portends uniformly negative consequences for the Northern Cheyenne. The natural environment of the Reservation will be degraded, major social and cultural stresses will occur, and unmitigated financial burdens will be visited on a Tribal government which presently is unable to provide adequate public services and facilities. Therefore, adopting an employment preference will endow the planned development with one positive attribute insofar as the Northern Cheyenne are concerned. This will serve federal regional coal development policy by generating significant grass roots support among the Northern Cheyenne.

The standard of living on the Northern Cheyenne Reservation is substantially lower than which prevails off-Reservation. In light of his trust responsibility to the Tribe, the Secretary would be acting appropriately in ameliorating the harsh economic conditions prevailing on the Reservation by providing to the Northern Cheyenne the advantage of an employment preference.

Industry should prefer the development of an indigenous work force: relocation costs are avoided, stability is enhanced, and much local goodwill is created. Also, to the extent that labor force is drawn from the local community, socio-economic impacts resulting from the inmigration of work force will be decreased. We believe that the validity of these observations has been demonstrated in the employment preference program adopted at Colstrip.

Proposed Lease Stipulation

On the basis of the foregoing considerations, the Northern Cheyenne Tribe proposes the following lease stipulation as a mitigation measure:

1. Members of the Northern Cheyenne Tribe, their children and their spouses ("Preferred Employees"), shall be given preferential consideration in recruitment, training, hiring, promotion, and reductions in work force, in all categories of employment.

2. The employment preference shall be implemented under the terms of a separate written agreement between the Tribe and each coal lessee, which will be approved by the Secretary. Negotiation of this agreement shall commence promptly after the identification of the successful bidder for the coal lease and shall be conducted thereafter with diligence and good faith. Without limitation, the written agreement shall include terms and conditions providing for the following:

   a. Quantitative goals, and a timetable for their achievement, for the employment of Preferred Employees in each job classification.

   b. Preservation of the lessee's authority to establish reasonable, even-handed and job-validated training programs, employment criteria, and work rules for all employees including Preferred Employees.

   c. Special programs for the recruitment of Preferred Employees.

   d. Special programs for the training of Preferred Employees, including on-the-job training, and training for advancement into supervisory positions.

   e. Special scholarships and tuition reimbursement programs for Preferred Employees.

   f. Special workshops for other project work force to develop an awareness of Northern Cheyenne culture and concerns and an understanding of the need for and requirements of the employment preference.

g. Special programs for the mass transportation of Preferred Employees between their homes and the job site.

h. Notification to all involved labor unions of the existence of the employment preference and of the lessee's duty and intent to abide by its terms.

i. A requirement that project contractors and subcontractors assume and comply with all terms and conditions of the employment preference in connection with their own project employment practices.

j. The establishment of an Employment Preference Committee, consisting of an equal number of representatives from the Tribe and the lessee, which shall supervise, monitor, and assure compliance with the terms of the employment preference.

k. Funding provided by the lessee to pay reasonable compensation and expenses of the Tribe's representatives on the Employment Preference Committee and of such staff and advisors as the Tribal representatives reasonably consider necessary to the performance of their responsibilities.

MITIGATION MEASURE II

Contracting and Procurement Preference

Indian entrepreneurship on the Northern Cheyenne Reservation has largely been unsuccessful. Indian entrepreneurship off the Reservation is virtually nil. There are approximately 25 businesses on the Reservation, and approximately 30 businesses in off-Reservation Ashland and Birney. About half of the Reservation businesses, including the general store in Lame Deer, are owned by non-Indians. All of the off-Reservation businesses are owned by non-Indians. Although there are several construction service firms on the Reservation owned by Northern Cheyenne, only one has achieved success in obtaining off-Reservation contracts.

There are a number of reasons for this poor record. As with off-Reservation employment opportunity, historically the Northern Cheyenne have been excluded from an equal opportunity to participate in non-Indian sponsored commercial ventures. In addition, both the Tribe and Tribal members are unable to pledge their trust property as security for the acquisition of capital. Furthermore, with a scant record of previous commercial success, lenders are reluctant to fund Northern Cheyenne entrepreneurs.

Therefore, absent special measures, the Northern Cheyenne will not participate in the entrepreneurial benefits engendered by the planned regional development.

In his Indian Policy Statement of January 24, 1983, President Reagan recognized the need for promoting Indian entrepreneurship and the many institutional barriers to that goal. He acknowledged that a "flexible approach" was needed for "creating a more favorable environment for the development of healthy Reservation economies." The Northern Cheyenne propose that in formulating the second Powder River Regional sale, the Secretary implement this policy by adopting special mitigation measures to promote Northern Cheyenne participation in the entrepreneurial opportunity engendered by the resulting development.

Proposed Lease Stipulation

To provide the Northern Cheyenne with access to the commercial opportunities that will result from regional development, the Northern Cheyenne Tribe proposes the following lease stipulation as a mitigation measure:

1. Businesses controlled by the Northern Cheyenne Tribe or its members ("Preferred Businesses") shall be given preferential consideration in the awarding of all contracts and subcontracts (a) for the conduct of operations, and (b) for the procurement of materiel and equipment for operations.

2. These preferences shall be implemented under the terms of a separate written agreement between the Tribe and each coal lessee, which will be approved by the Secretary. Negotiation of this agreement shall commence promptly after the identification of the successful bidder for the coal lease and shall be conducted thereafter with diligence and good faith. Without limitation, the written agreement shall include terms and conditions providing for the following:

a. Quantitative goals, and a timetable for their achievement, for the awarding of contracts, subcontracts and procurement contracts to Preferred Businesses.

b. A certification procedure, under which a business entity applying for the status of Preferred Business may seek certification in the following two respects:

(1) as an entity actually controlled by the Tribe or a Tribal member; and

(2) as an entity capable of competently providing particular contract services or supplying particular materiel or equipment.

c. Technical and financial assistance to Preferred Businesses designed to assist them in obtaining such certification.

d. Advance notice to certify Preferred Businesses of service or procurement contracts to be awarded for which they are qualified.

e. Where services or procurement contracts are to be awarded by competitive bid, the establishment of formulas whereby a certified Preferred Business is granted a bidding margin, i.e., a reasonable sum by which its bid may exceed all other bids.

f. A requirement that project contractors and subcontractors assume and comply with all terms and conditions of these preferences in connection with their own project contracting and procurement practices.

g. Establishment of a Contracting Preference Committee, consisting of an equal number of representatives from the Tribe and the lessee, which shall supervise, monitor, and assure compliance with the terms of the preference.

h. Funding provided by the lessee to pay reasonable compensation and expenses of the Tribe's representatives on the Contracting Preference Committee and of such staff and advisors as the Tribal representatives reasonably consider necessary to the performance of their responsibilities.

MITIGATION MEASURE III

Law and Order; Traffic

The Tribe previously has explained its profound concerns about the maintenance of the law and order of the Reservation. In recent years, regional development has led to increased use of the Reservation—its roads, recreation areas, services and facilities—by non-Indians as well as Indians. This has resulted in an increasing incidence of criminal and traffic violations that threaten the safety and tranquility of the Reservation. New leasing of federal coal reserves, bringing substantial population increases to the Reservation and the region as a whole, will multiply these problems. As the Tribe has explained, it is uniquely vulnerable to the resulting threats to law and order because of the anomalous jurisdictional status of non-Indians on the Reservation.

Proposed Lease Stipulation

To remedy this jurisdictional problem, the Northern Cheyenne Tribe proposes the following lease stipulation as a mitigation measure:

1. Each coal lessee shall obtain a covenant from each of its employees that while on the Reservation for any purpose the employee will comply with all standards of conduct generally applicable to Tribal members.

2. Each coal lessee shall obtain a covenant from each of its truckers that while operating trucks on the Reservation the trucker will comply with all laws, ordinances and rules applicable to the use of motor vehicles by Tribal members.

3. Each coal lessee shall by contract require (a) each of its contractors and subcontractors to obtain like covenants from their employees and truckers, and (b) each of its suppliers to obtain a like covenant from their truckers.

4. The above described duties imposed on employees and truckers shall be enforced by each coal lessee, and its contractors, subcontractors and suppliers, by taking appropriate employee-related disciplinary action in the event a violation of such duties is reported by the Tribe.

5. These provisions shall be implemented under the terms of a separate written agreement between the Tribe and each coal lessee, which will be approved by the Secretary. Negotiation of this agreement shall commence promptly after the identification of the successful bidder for the coal lease and shall be conducted thereafter with diligence and good faith. Without limitation, the written agreement shall include terms and conditions providing for the following:

a. Assumption in writing, as a condition of employment, by each employee and trucker, of the conditions set forth in 1 through 4 above.

b. Education of employees and truckers with respect to the standards of conduct applicable on the Reservation.

c. Appropriate employee-related disciplinary action for particular violations.

d. Resolution of disputes concerning the occurrence of violations.

e. Notification to all involved labor unions of the existence of the written agreement and the lessee's duty and intent to abide by its terms.

f. Funding provided by the lessee to pay reasonable costs incurred by the Tribe in implementing the agreement.

MITIGATION MEASURE IV

Environmental Protection

The Northern Cheyenne Reservation serves as the traditional homeland of the Northern Cheyenne people. As the Department knows, the Tribe considers the preservation of the Reservation's physical environment to be of paramount importance. The Tribe has taken decisive action—in adopting a Class I air quality classification and opposing on-Reservation coal development—in pursuit of that goal. Unlike other lands to the north, east, and south, the Reservation is not a fungible piece of real estate. Its preservation is essential to the survival of the Tribe itself.

The major industrial development that will result from federal coal leasing poses a threat to air and water quality on the Reservation, the Reservation's plant and animal life, and the health and welfare of Tribal members. Because the Reservation occupies the geographic center of the planned development, it is especially vulnerable to adverse environmental impacts. Furthermore, since the Northern Cheyenne Reservation is the only possible homeland for the Northern Cheyenne people, adverse environmental impacts on the natural resources of the Reservation—which serve as the wellspring of the Northern Cheyenne culture—are of unique concern in the region. This concern is specially relevant to actions taken by the Secretary of the Interior, who has a solemn trust obligation to safeguard the Northern Cheyenne homeland. Thus, special steps should be taken to protect the environmental quality of the Reservation.

Proposed Lease Stipulation

In order to monitor and prevent degradation of the Reservation's natural environment, the Northern Cheyenne Tribe proposes the following lease stipulation as a mitigation measure:

1. A program shall be established to monitor air quality, visibility, water quality, and biological and other resources on the Reservation which may be affected adversely by the project. The program shall provide for baseline monitoring for a reasonable period before construction of the project and ongoing monitoring thereafter throughout the life of the project.

2. The program shall be conducted under the terms of a written agreement among the Tribe, the coal lessee, and all federal and state agencies with pollution control jurisdiction over the project, which will be approved by the Secretary. Negotiation of this agreement shall commence promptly after the identification of the successful bidder for the coal lease and shall be conducted thereafter with diligence and good faith. Without limitation, the written agreement shall include terms and conditions providing for the following:

a. Comprehensive monitoring of Reservation sources as provided in "1." above.

b. Utilization of state-of-the-art monitoring equipment and techniques, to be maintained in good operating condition and upgraded to reflect advances in technology.

c. Use of qualified professional to design and conduct monitoring and analyze results.

d. Recruitment, training (including technical education and on-the-job training), and employment of Tribal members, their children and their spouses ("Preferred Employees") to assume responsibility to the fullest extent possible for the operation of the monitoring program.

e. The establishment of an Environmental Monitoring Committee consisting of four representatives, one each from the Tribe, the lessee, the involved federal agencies, and the involved state agencies, which shall supervise and direct the monitoring program and assure that it is carried out according to the terms of the agreement.

f. Remedies in the event that air or water quality standards applicable to the Reservation are violated or that Reservation resources are materially impaired as a result of the construction or operation of the project.

g. Funding provided by the lessee to pay: (1) the cost of the monitoring program, including the acquisition, maintenance and upgrading of equipment, the salaries of program employees, and the recruitment and training of Preferred Employees; and (2) reasonable compensation and expenses of the Tribe's representative on the Environmental Monitoring Committee, and of such staff and advisors as the Tribal representative reasonably considers necessary to the performance of his responsibilities. When an environmental monitoring program established for a particular project will contribute to the environmental monitoring program required for one or more other projects, the programs shall be integrated to the fullest extent reasonably possible, and the capital and operating costs of the integrated program shall be equitably apportioned among the projects.

MITIGATION MEASURE V

Impact Assistance

The Tribe has repeatedly advised the Department of its concerns regarding the increased demands that will be placed on Reservation public services and facilities as a result of regional coal development. The Reservation is in no sense immune from these demands; indeed, given its central location, it is uniquely vulnerable to them. However, as between the Tribe and its off-Reservation counterparts, there is a gross disparity in the availability of funds to satisfy these demands.

Off-Reservation, state and local governments can draw upon a variety of revenue sources in order to prepare for and meet the impacts of massive coal development. In addition to traditional sources of revenue, such as real and personal property taxes and the sale of tax exempt bonds, these units of government receive a significant portion of the income generated by coal mining. Fifty percent of the federal bonuses, rentals and royalties are returned to the state. In addition, 30 percent of mine income is collected by the state through its severance tax, and an additional percentage is collected by the counties through the coal gross proceeds tax.

These revenue sources are unavailable to the Tribe: it receives no part of the federal bonuses, rentals or royalties; it cannot collect severance, gross proceeds or any other taxes from the mines; and it has virtually no independent tax base of its own on which to draw. Although new federal legislation (which expires unless reenacted in 1984) permits Indian Tribes to sell tax exempt bonds, and state law now permits Tribes to apply for grants and loans from Montana's Coal Board, neither will serve as a reliable or adequate source of funding for the Tribe.

In short, off-Reservation governments receive substantial revenues as a result of development from which the Tribe is excluded. Such revenues provide off-Reservation communities with the means to mitigate negative consequences of development. Similar provision should be made for the Tribe.

Proposed Lease Stipulations

The Northern Cheyenne Tribe proposes two alternative lease stipulations as mitigation measures, either of which may enable it to mitigate adverse socioeconomic impacts on the Reservation:

Alternative A

The federal government returns 50 percent of coal lease bonuses, rentals and royalties to the state ("Off-Reservation Federal Impact Funds"). By federal statute, these funds are to be used to mitigate adverse impacts of coal development. These impacts can be expected to occur in Big Horn, Rosebud and Powder River Counties (the "Three County Area"), both on and off the Reservation.

No portion of off-Reservation Federal Impact Funds, however, is made available to the Tribe.

The Tribe proposes that it be provided with a reasonably proportionate level of funding. It should be recognized that such funding will be substantially less than the total funding available to off-Reservation governments, since, as noted above, off-Reservation governments have other sources of funding that are not available to the Tribe.

Specifically, this proposed stipulation is as follows:

1. The lessee shall make contributions to the Tribe for the exclusive purpose of planning and providing public services and facilities on the Reservation.

2. Lessee contributions shall be calculated by taking the amount of Off-Reservation Federal Impact Funds generated by the lease, dividing by the non-Reservation resident population of the Three County Area, and then multiplying the resident population of the Northern Cheyenne Reservation.

3. Lessee contributions shall be provided to the Tribe at the same time that the Off-Reservation Federal Impact Funds are provided to the state.

4. This funding program will be implemented under the terms of a separate written agreement between the Tribe and each coal lessee, which will be approved by the Secretary. Negotiation of this agreement shall commence promptly after the identification of the successful bidder for the coal lease and shall be conducted thereafter with diligence and good faith.

Alternative B

Through the existing taxation and impact funding regime, coal lessees will contribute substantial revenues to the increased costs of off-Reservation public services and facilities. However, they will make no significant contribution to such costs on the Reservation. Yet it is clear that development-induced increases in regional population, both on and off the Reservation, will place significant new demands on Reservation services and facilities.

If a coal project causes work force and their families to reside on the Reservation, the project should bear some portion of the resulting costs incurred by the Tribe for Reservation services and facilities. The Tribe suggests that the Tribe and the project contribute equally to these increased costs. A per capita funding formula is suggested to achieve this.

In addition, project work force and their families residing off-Reservation will burden Reservation services and facilities. Here, too, the project should bear some portion of these increased Tribal costs. The Tribe suggests that the project make a reduced contribution to these costs. This contribution will be based only on the number of workers, without including their families as well, and uses a per capita funding rate which is one-third of that applicable to on-Reservation residents.

This would be a most conservative measure of the impact costs to be incurred by the Tribe. First, it provides for cost sharing between the Tribe and the project. Second, the calculation is based only on Tribal expenditures from its own funds, ignoring contributions from other sources. Third, it includes only selected Tribal programs. Fourth, it will not provide to the Tribe the enormous funding which will be provided to the state and its subdivisions. In short, under this proposal a modest level of assistance will be provided to the Tribe to help it meet the service and facility demands engendered by development.

Specifically, this proposed stipulation is as follows:

1. The lessee shall make an annual contribution to the Tribe for the exclusive purpose of planning and providing public services and facilities on the Reservation.

2. Lessee contributions shall be based on the Tribe's own expenditures for Reservation services and facilities ("Tribal Expenditure"). The Tribal Expenditure shall be calculated by determining the total amount of Tribal funds committed during the previous year to the Tribal programs listed below and dividing that sum by that year's total resident Reservation population. The programs to be included are:

   a. Education
   b. Ambulance service
   c. Health care
   d. Alcoholism and drug abuse treatment
   e. Law and order
   f. Tribal court
   g. Rural officers/game warden program
   h. Recreational facilities
   i. Transportation
   j. Shelter home for children
   k. Day care
   l. Elderly residence and care
   m. Garbage canister program
   n. Utility commission
   o. Tribal government

3. The lessee shall contribute annually 100 percent of the Tribal Expenditure for each project employee, and for each member of the employee's household, who resides on the Reservation. In addition, the lessee shall contribute annually 33 1/3 percent of the Tribal Expenditure for each project employee who resides off the Reservation.

4. This mitigation program shall be implemented under the terms of a separate written agreement between the Tribe and each coal lessee, which will be approved by the Secretary. Negotiation of this agreement shall commence promptly after the identification of the successful bidder for the coal lease and shall be conducted thereafter with diligence and good faith.

APPENDIX C-2
FULL TEXT OF CULTURAL MITIGATION

The following information was gathered from Northern Cheyenne and Crow cultural leaders as part of the BLM contract to assess cultural impacts to Native American belief and value systems from Powder River I federal coal leasing. This appendix represents the opinions of those cultural leaders regarding mitigation strategies.

NORTHERN CHEYENNE



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Avoidance of leasing of Powder River I Tracts is the only mitigation measure to avoid the destruction of spirits associated with springs. For those that can not be avoided, partial mitigation can be accomplished by recording the oral history associated with each spring location. This may require an on site visit by a knowledgeable Northern Cheyenne elder and the oral historian/ethnographer. At a minimum, it would require interviewing about the specific localities affected. Videotaping the interview and placing it in the Dull Knife Memorial College archives would be in keeping with the current program to preserve cultural knowledge for the community, and thus would be in keeping with Northern Cheyenne values.

Avoidance; i.e., not opening new mines or expanding existing mines, is the only option to ensure that areas of the Earth Surface Dome are not turned into spiritually inert dead earth. Religious reclamation is not possible according to Northern Cheyenne theology. This is also the only possible strategy for not destroying the relationship between the Holy Lodge and its environmental setting, and the relationship between the Ashland and Birney Villagers and their environmental setting.

Avoidance is the only mechanism for preventing dislocations of the Great Birds/mediators between the Cheyenne and the Spirit Beings of the Blue-Sky Space. The significance of this in Northern Cheyenne spiritual life is unpredictable. The same is true of the possible changes in the distribution of mammals and certain plants whose various body parts are essential ritual items. If any of these items becomes too scarce, or if access to them is totally blocked, the military societies would have to meet to decide on the proper course of action. They would most likely decide to seek out alternate sources. Loss of access to the pigment source east of the Tongue River would also call the military societies into action.

Avoidance is the only mechanism to avoid increasing non-Native American population density and the associated loss of privacy and seclusion necessary for religious practices. It is the only mechanism which would allow Birney children to continue to grow up in a sheltered protective environment where they can develop a personal spiritual relationship with the cultural aspects of the environment.

Possible mitigation of Northern Cheyenne language loss from increasing non-Native American population density could include such strategies as funding bilingual programs and teaching Northern Cheyenne culture at all academic levels.

The Northern Cheyenne Cultural Protection Board is currently developing standards for the proper treatment of burials. Implementing these standards on all tracts would be an effective mitigation measure.

In the case of the new mine tracts (Cook Mountain, Coal Creek, Northwest Otter Creek, Southwest Otter Creek, and Decker-Birney (Ashland)), partial mitigation of the cultural impacts on these highly sensitive areas would involve gathering a systematic oral history of the areas with a particular emphasis on past and present ceremonial uses of the area. Specific measures for the new mine tracts include tracing the original homesteads of Birney Native American families, recording burials so the sites can be avoided, if possible, or treated respectfully, and reburying the remains following the standards of the Northern Cheyenne Cultural Protection Board.

The Northern Cheyenne have their own definitions of the significance of archaeological properties. Any cultural resource strategies developed in association with coal leasing should include early consultation with the Northern Cheyenne Cultural Protection Board. This consultation should begin early enough so that the Board members may participate in the survey if they deem it necessary. Further, representatives of this board should participate in the decisionmaking process concerning cultural resources important to the Northern Cheyenne. At a minimum, this should include all burials, rock art sites, plant and pigment collecting areas, and any site with evidence of past or present ceremonial use.

There is generally little faith among the Northern Cheyenne in reclamation projects or air quality monitoring. This is partially due to the way it is presented to the Northern Cheyenne. Formal public meetings set up and run at the convenience of outside experts are generally poorly attended and rarely present the information in a fashion that is readily assimilated by community members. General concerns about air and water pollution could be lessened by presenting information to the Northern Cheyenne in a more culturally sensitive fashion; e.g., attending District meetings in local communities held at Cheyenne convenience and/or publishing results of moni-

toring programs in lay English in local publications like the *Cheyenne Scout.*

The Northern Cheyenne Tribe has taken the position that effective mitigation of impacts can take place only if it is required by binding lease stipulations.

CROW

The Crow Historic and Cultural Committee (CHCC) should be notified early in the planning process and have an active role in the formulation of plans for protection of cultural resources. This should include the definition and recognition of ethnic significance of archaeological resources, plans for avoidance, whenever possible, of sites with *baxpe* attributes, especially burials, fasting sites, rock art sites in current use for ceremonial purposes, etc., and plans for site visits and assessments by committee members as needed. Early planning should also address the question of ownership of artifacts, protecting sites from vandalism, and making the recovered archaeological information readily available to the Crow. These measures are particularly important to the Crow in the Spring Creek and Decker expansion/extension tracts.

Respectful treatment of the earth, plants, and animals most often means controlled uses of areas, plants, and animals, but no avoidable destruction of resources. Reclamation is regarded by some Crow as a legitimate mitigation measure. By reclamation, they mean restoration to useful economic conditions, usually expressed in terms of ranching/grazing potential, and not to preexisting conditions. At least one member of the CHCC says that mitigation of plant and animal species used for religious purposes is unnecessary because they can be acquired in other areas.

One Tribal official would like to see a joint task force of Tribal, state, federal, and county officials set up to ease some of the stress created by the various jurisdictional disputes. Hospitality is highly valued by the Crow and the official believes that the Crow should cooperate with their neighbors since they would all experience similar problems associated with coal development.

Avoidance of mining is the only general option for mitigating the more general concerns of the weakening of ethnic identity through the loss of land, reduction of the environmental setting which provides major sources of inspiration, the loss of privacy for religious activities, and the deemphasis of traditional values.

APPENDIX C-3
QUANTIFICATION OF MITIGATION OPTIONS

This appendix quantifies the possible results of implementing three of the Northern Cheyenne's proposed stipulations on preferential employment (Mitigation Option 1D), preferential contracting (Mitigation Options 1E and 4F), and direct impact assistance (Mitigation Option 4D). Mitigation Option 4C, which would redistribute federal mineral royalty payments, is also analyzed.

Quantification of this sort requires assumptions about the actual implementation of these proposed mitigation options; these assumptions are stated for each option. Different assumptions about key variables (e.g., Native American hiring rate) will, of course, lead to different numerical results.

PREFERENTIAL EMPLOYMENT (Mitigation Option 1D)

Native Americans comprise approximately 30 percent of the combined population of Rosebud, Big Horn, and Powder River Counties. Using the 30 percent Native American population ratio as a reasonable estimate of the stipulated Native American hiring rate, there would be approximately 210 Native American direct operations jobs associated with Leasing Alternative 2A, 140 with 2B, and 399 with 4. This would result in an annual direct operations payroll of $6,930,000, $4,620,000, and $13,167,000 for Leasing Alternative 2A, 2B, and 4, respectively, assuming an average annual wage of $33,000.

Using Leasing Alternative 2A as a reference level, this mitigating measure would be highly effective at reducing Native American unemployment and increasing personal income. The BLM gravity model (Technical Report 2) indicates that approximately 90 percent of the Native Americans employed at new mine tracts would reside on the Northern Cheyenne Reservation and 10 percent would reside on the Crow Reservation with Leasing Alternative 2A. This is due primarily to the relative proximity of the Northern Cheyenne Reservation to the new mine tracts which are all in the Ashland area near the eastern border of the Northern Cheyenne Reservation. (See Map B-3 in Appendix B.)

Assuming this measure was implemented on the Northern Cheyenne Reservation with a 27 percent hiring rate (30 percent of Native American population in the three-county area times 90 percent of Native American workers residing on the Northern Cheyenne Reservation), on-Reservation employment with Leasing Alternative 2A would increase by 186 employees (33 percent increase) and annual household income by $6 million (33 percent increase) in 2005 over the High Baseline levels. This would constitute an extremely effective mitigating measure with very beneficial implications to virtually all facets of Northern Cheyenne economic and social structure.

PREFERENTIAL CONTRACTING (Options 1E and 4F)

The following contract-related revenues would occur if 15 percent of estimated contracts from development associated with the three federal leasing alternatives are awarded to Native American businesses:

	Estimated Total Annual Contracts*	Estimated Annual Contracts to Native Americans (15 Percent of Total Contracts)
Leasing Alternative 2A	$6,000,000	$900,000
Leasing Alternative 2B	$4,000,000	$600,000
Leasing Alternative 4	$12,000,000	$1,800,000

*Total contracts are assumed to be 30 cents/ton of coal mined/year at new mine tracts.)

If the 15 percent of the amount from Leasing Alternative 4 becomes available to the Northern Cheyenne, it would increase Northern Cheyenne business activity by 11 percent over the High Baseline in 2005. This measure would increase income flows to the Reservation.

IMPACT ASSISTANCE (Mitigation Option 4D)

This mitigation would require the lessee to provide direct financial assistance to the Northern Cheyenne Tribe. This option would have the lessee provide assistance at the same level as the off-Reservation residents of Big Horn, Rosebud, and Powder River Counties would receive if they received all of the federal royalty payments made to the state from mining of the Powder River Round I tracts. The level of payment is tied to the total level of population rather than the population increase related to development of the Powder River I tracts. For this analysis, production was calculated on an annualized average of federal coal mined over the life of the mine. This annual production was then multiplied by the 12½ percent federal royalty rate and then multiplied by 50 percent to obtain the amount of money available to the State of Montana. This total was then divided by the off-Reservation population of Big Horn, Rosebud, and Powder River Counties to obtain the amount of available funds per capita. This per capita amount is then multiplied by the Reservation population to

obtain the level of annual assistance which would occur using this method.

Using the Northern Cheyenne Reservation population only, the annual impact assistance to the Northern Cheyenne Reservation, by leasing alternative, using 1986 population numbers would be:

Leasing Alternative	Impact Assistance to Northern Cheyenne Reservation
2A	$1,901,276
2B	$1,365,019
4	$2,656,912

This method provides substantial financial resources to the Tribe to help mitigate impacts to Reservation services. However, this method is only loosely tied to the level of impact which would occur on the Reservation due directly to Round I coal development; it is more closely tied to the general population growth on the Reservation. In addition, there is no direct tie with the costs needed to meet service demands on the Reservation.

The Northern Cheyenne Tribe offered two methods for calculating impact assistance and indicated that either method would be satisfactory. For purposes of this analysis, their first suggested method was used because fewer assumptions were needed in the analysis. For details of both impact assistance funding formulas, see Appendix C-1, "Mitigation Measure V."

REDISTRIBUTION OF FEDERAL MINERAL ROYALTY PAYMENTS (Mitigation Option 4C)

At the present time, the federal government returns to the state one-half of the federal mineral royalties collected from the leasing of federal minerals. The royalties returned to the State of Montana are presently all used as partial funding for the statewide school foundation program.

The following levels of funding would be available on an annual average basis if 20 percent of the state's share of mineral royalty payments from the Powder River I tracts were awarded to the Northern Cheyenne Reservation for impact assistance.

	Average Annual Federal Mineral Royalty Payment to State From Powder River I Tracts	To Northern Cheyenne Reservation (20 Percent of Column 1)
Leasing Alternative 2A	$9,750,000	$1,950,000
Leasing Alternative 2B	$7,000,000	$1,400,000
Leasing Alternative 4	$13,625,000	$2,725,000

Production assumptions are based upon the average annual production of Powder River I federal coal over the life of each tract. Actual amounts could fluctuate from year to year. If this money is made available to the Tribe, it could help alleviate some of the impacts to Reservation services. This method of funding is not tied directly to the level of impact. Therefore, the level of funding is not directly related to the cost of supplying services to meet Reservation demands as a result of Powder River I impacts.

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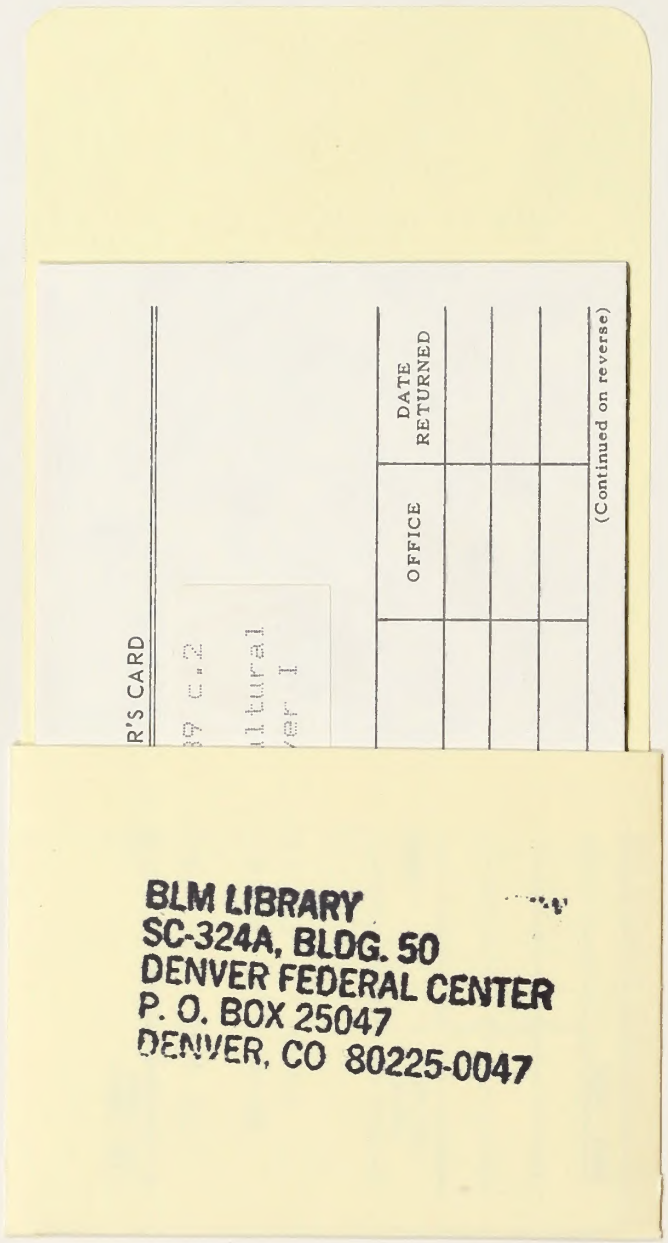
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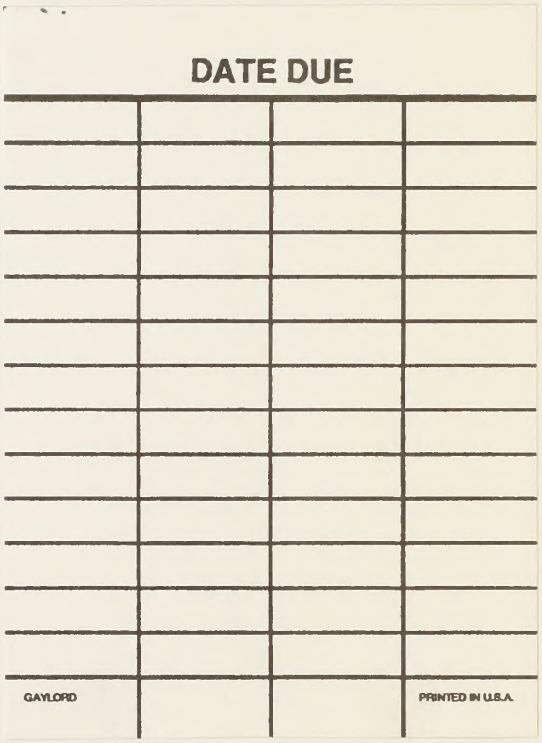
White Dirt, Charles. 1987. Personal communication with Sherri Deaver, Ethnoscience, Billings, Montana

Windy Boy, Janine. November 5, 1987. President, Little Big Horn Community College. Personal communication in Crow Agency, Montana, with Joan Trent, Sociologist, BLM, Billings, Montana.

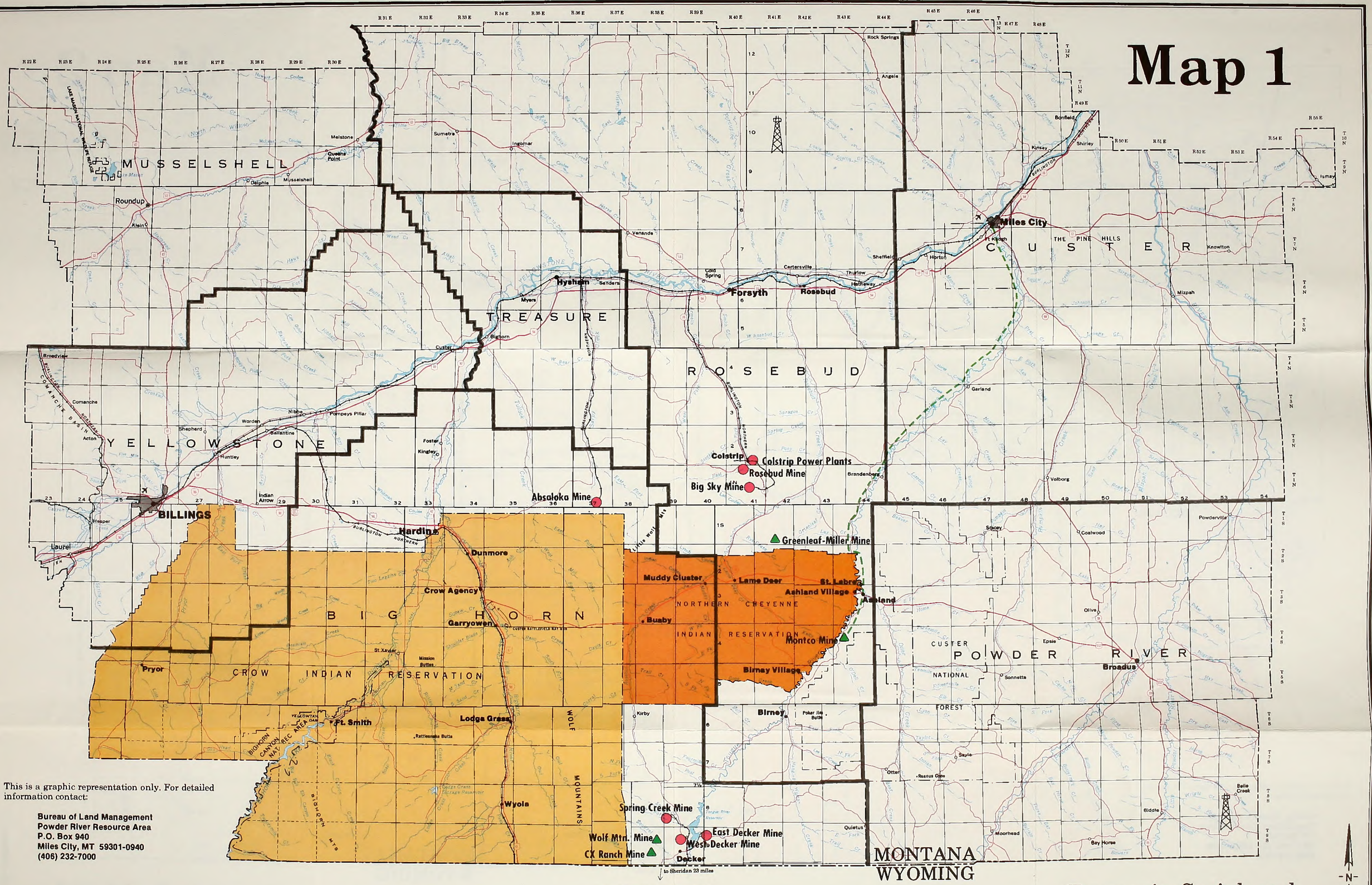
Wolfchief, Norma, and Edwin Dahle. May 26, 1983. *Statement of the Northern Cheyenne Tribe at the Powder River Basin Coal Region EIS Scoping Meeting*. Ashland, Montana.

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Map 1



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POWDER RIVER I
HIGH BASELINE ALTERNATIVE

Legend

- Crow Reservation
- Northern Cheyenne Reservation
- Oil & Gas Exploration and Development
- Proposed Tongue River Railroad
- Existing Mines/Power Plants
- Proposed Mines (Not part of Powder River I Leasing Offering)

EXISTING DEVELOPMENTS

Name	1987 Production [1]	1987 Employment [2]
Absaloka Mine	1,858,315 tons	55
Decker East and West Mines	10,398,120 tons	246
Big Sky Mine	3,234,538 tons	109
Rosebud Mine	12,022,894 tons	347
Spring Creek Mine	6,557,228 tons	164
Total Mines	34,071,095 tons	921
Colstrip Power Plants	2060 Megawatts	675

PROPOSED PROJECTS

Name	Projected Production [2]	Projected Direct Employment [2]	
		Peak Construction	Long-Term Operations
Montco Mine	6 million tons/yr.	203	199
CX Ranch Mine	8 million tons/yr.	255	265
Wolf Mountain Mine	4 million tons/yr.	117	132
Greenleaf-Miller Mine	4 million tons/yr.	117	132
Tongue River Railroad	—	301	58

Source: [1] Montana Coal Council, January 1988
[2] Contacts with Coal Companies, Direct Employment Only

Economic, Social, and Cultural Supplement

Powder River Round I Coal EIS

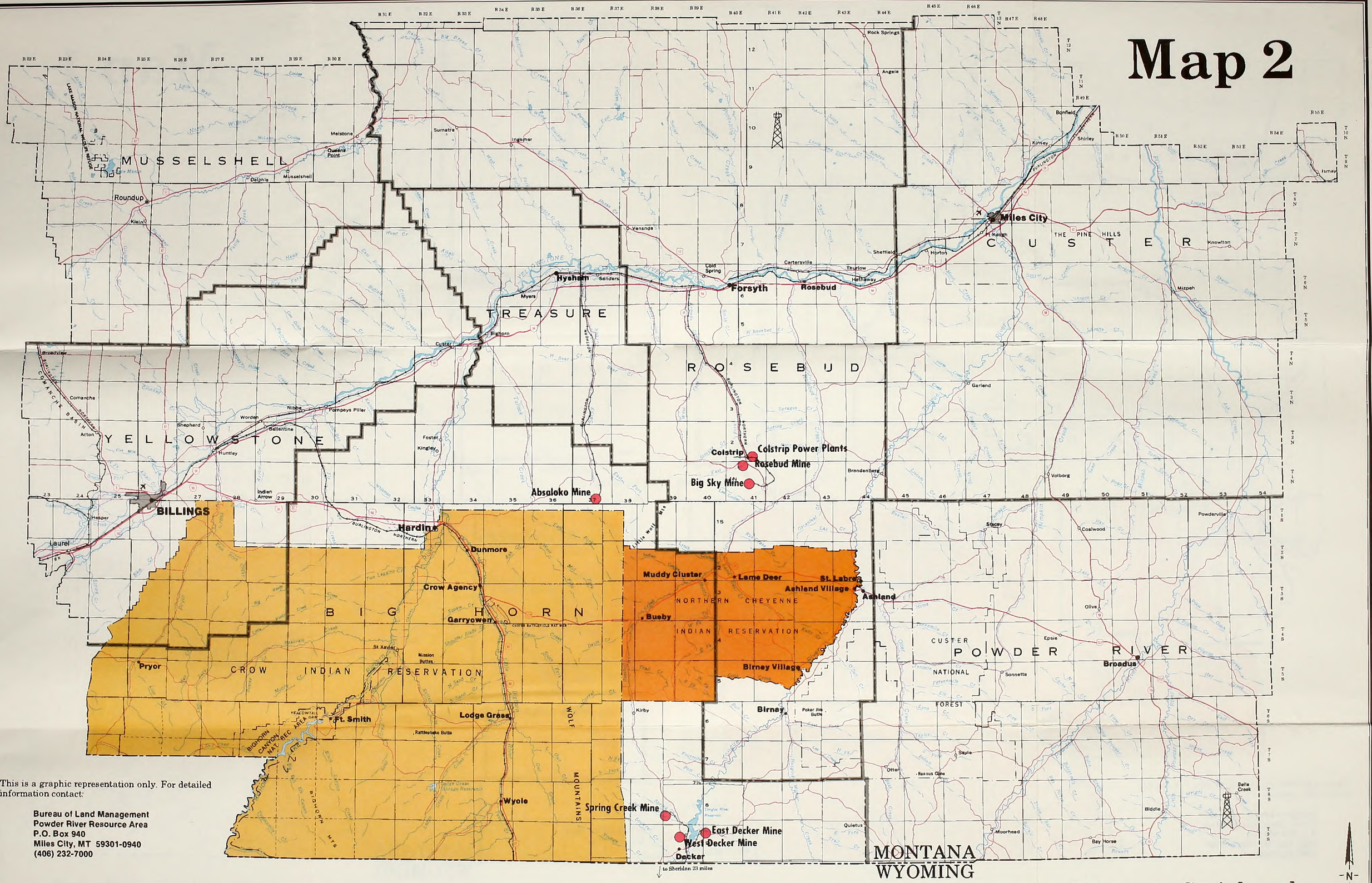
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10 0 10 20 30 40 50 Kilometers

-N-

Map 2



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Legend

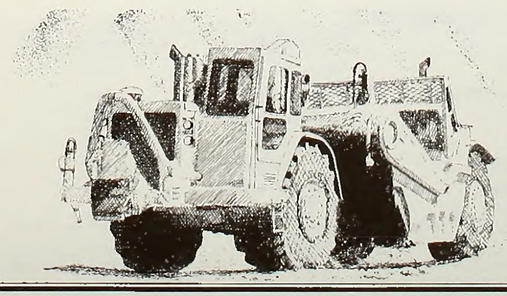
- Crow Reservation
- Northern Cheyenne Reservation
- Oil & Gas Exploration and Development
- Existing Mines/Power Plants

POWDER RIVER I
LOW BASELINE ALTERNATIVE

EXISTING DEVELOPMENTS

Name	1987 Production [1]	1987 Employment [2]
Absaloka Mine	1,858,315 tons	55
Decker East and West Mines	10,398,120 tons	246
Big Sky Mine	3,234,538 tons	109
Rosebud Mine	12,022,894 tons	347
Spring Creek Mine	6,557,228 tons	164
Total Mines	34,071,095 tons	921
Colstrip Power Plants	2060 Megawatts	675

Source: [1] Montana Coal Council, January 1988
[2] Contacts with Coal Companies, Direct Employment Only



Economic, Social, and Cultural Supplement

Powder River Round I Coal EIS

Bureau of Land Management
1988

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10 0 10 20 30 40 50 Kilometers

-N-

Map 3

MUSSELSHELL
TREASURE
ROSEBUD
YELLOWSTONE
BIG HORN
CUSTER
POWDER RIVER
THE PINE HILLS
CROW INDIAN RESERVATION
NORTHERN CHEYENNE INDIAN RESERVATION
CUSTER NATIONAL FOREST
LAKE MASON NATIONAL WILDLIFE REFUGE
BIGHORN CANYON NAT REC AREA
YELLOWTAIL RESERVOIR
CUSTER BATTLEFIELD NAT MON
COMANCHE BASIN
WOLF MOUNTAINS
BIGHORN MTS

Roundup
Melstone
Queens Point
Musselshell
Delphia
Klein
Sumatra
Ingomar
Rock Springs
Angela
Bonfield
Kinsey
Shirley
Ismay
Miles City
Knowlton
Mizpah
Venanda
Sheffield
Horton
Cartersville
Thurlow
Hathaway
Cold Spring
Hysham
Sanders
Myers
Forsyth
Rosebud
Custer
Bighorn
Broadview
Comanche
Acton
Shepherd
Worden
Nibbe
Pompeys Piller
Ballantine
Huntley
Foster
Kingsley
Garfield
Brandenberg
Volborg
Absaloka Mine
BILLINGS
Hesper
Laurel
Indian Arrow
Harding
Dunmore
Crow Agency
Gerryowen
St Xavier
Mission Buttes
Pryor
Ft. Smith
Lodge Grass
Rattlesnake Butte
Wyola
Little Wolf Mts
Colstrip
Colstrip D Tract
Colstrip Power Plants
Colstrip A&B Tract
Colstrip C Tract
Rosebud Mine
Big Sky Mine
Greenleaf-Miller Mine
Muddy Cluster
Lame Deer
St. Labre
Ashland Village
Busby
Montco Mine
Birney Village
Cook Mtn. Tract
Coal Creek Tract
Ashland
Northwest Otter Creek Tract
Stacey
Coalwood
Powderville
Olive
Epsie
Broadus
Sonnette
Kirby
Birney
Poker Jim Butte
Sayle
Otter
Reanus Cone
Belle Creek
Biddle
Moorhead
Bay Horse
Quietus
Spring Creek Mine
Spring Creek Tract
North Decker Tract
East Decker Mine
Wolf Mtn. Mine
West Decker Mine
CX Ranch Mine
West Decker Tract
Decker
to Sheridan 23 miles
MONTANA
WYOMING

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POWDER RIVER I
LEASING ALTERNATIVE 2A

Legend

- Crow Reservation
- Northern Cheyenne Reservation
- Oil & Gas Exploration and Development
- Proposed Tongue River Railroad
- Existing Mines/Power Plants
- Proposed Mines (Not part of Powder River I Leasing Offering)
- Expansion/Extension Tracts (Powder River I Lease Tracts)
- New Mine Tracts (Powder River I Lease Tracts)

NEW MINE TRACTS

Name	Projected Production	Projected Direct Employment	
		Peak Construction	Long-Term Operations
Cook Mountain Tract	6.4 million tons/yr	204	212
Coal Creek Tract	4.1 million tons/yr	124	136
Northwest Otter Creek Tract	10.3 million tons/yr	306	341

EXPANSION/EXTENSION TRACTS

Name	Projected Production	Projected Direct Employment
Colstrip A&B Tract Colstrip C Tract Colstrip D Tract West Decker Tract North Decker Tract Spring Creek Tract	Production of coal from these tracts is assumed to extend the life of existing mines, rather than to increase annual output. With this assumption, leasing of these tracts would not significantly change the annual employment, payroll, and population levels in the area.	

Source: BLM, Miles City District Office, 1987.
NOTE: Locations of tracts are approximated.

Economic, Social, and Cultural Supplement

Powder River Round I Coal EIS

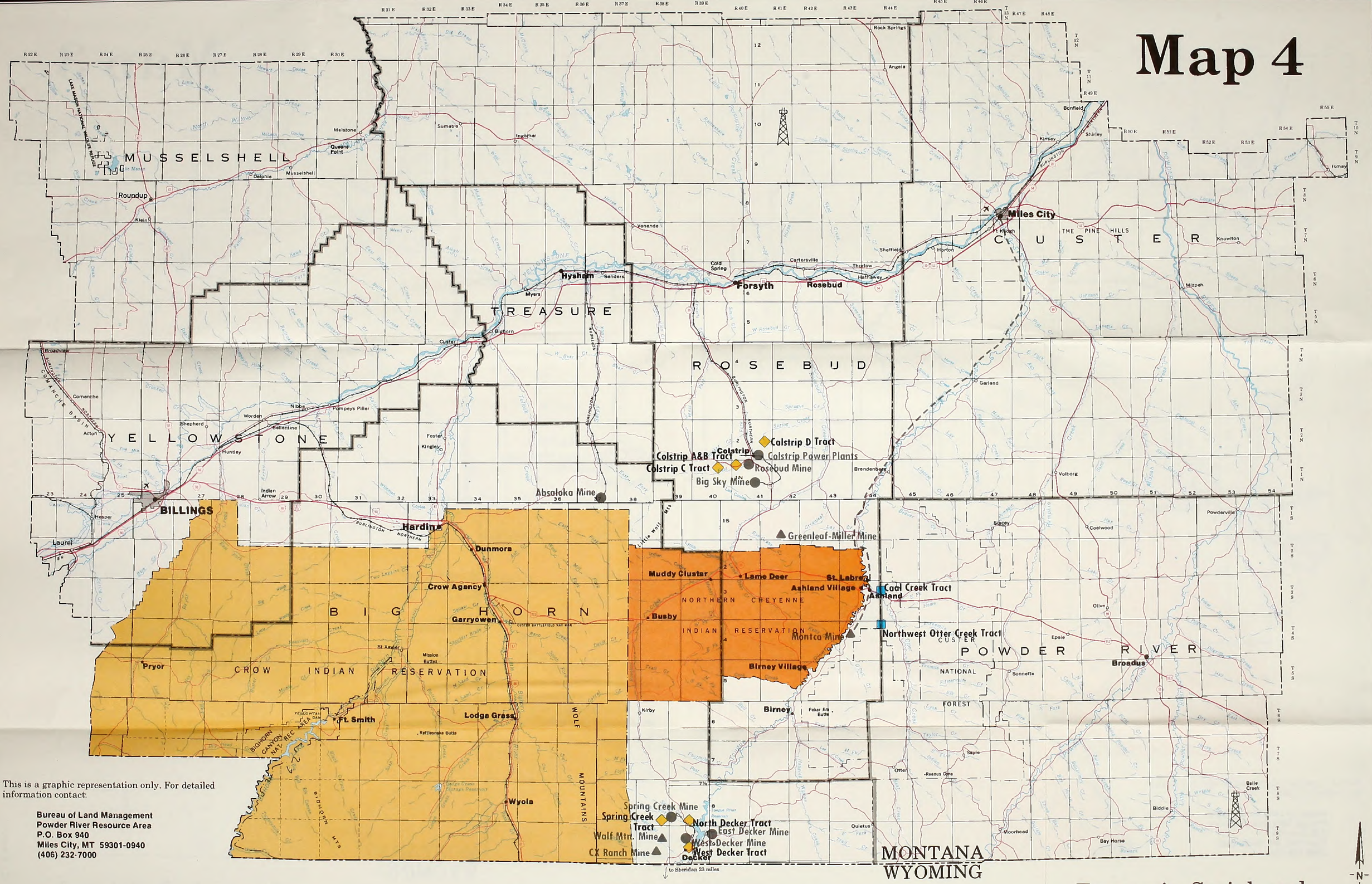
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Map 4



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POWDER RIVER I
LEASING ALTERNATIVE 2B

Legend

- Crow Reservation
- Northern Cheyenne Reservation
- Oil & Gas Exploration and Development
- Proposed Tongue River Railroad
- Existing Mines/Power Plants
- Proposed Mines (Not part of Powder River I Leasing Offering)
- Expansion/Extension Tracts (Powder River I Lease Tracts)
- New Mine Tracts (Powder River I Lease Tracts)

NEW MINE TRACTS

Name	Projected Production	Projected Direct Employment	
		Peak Construction	Long-Term Operations
Coal Creek Tract	4.1 million tons/yr	124	136
Northwest Otter Creek Tract	10.3 million tons/yr	306	341

EXPANSION/EXTENSION TRACTS

Name	Projected Production	Projected Direct Employment
Colstrip A&B Tract Colstrip C Tract Colstrip D Tract West Decker Tract North Decker Tract Spring Creek Tract	Production of coal from these tracts is assumed to extend the life of existing mines, rather than to increase annual output. With this assumption, leasing of these tracts would not significantly change the annual employment, payroll, and population levels in the area.	

Source: BLM, Miles City District Office, 1987.
NOTE: Locations of tracts are approximated.

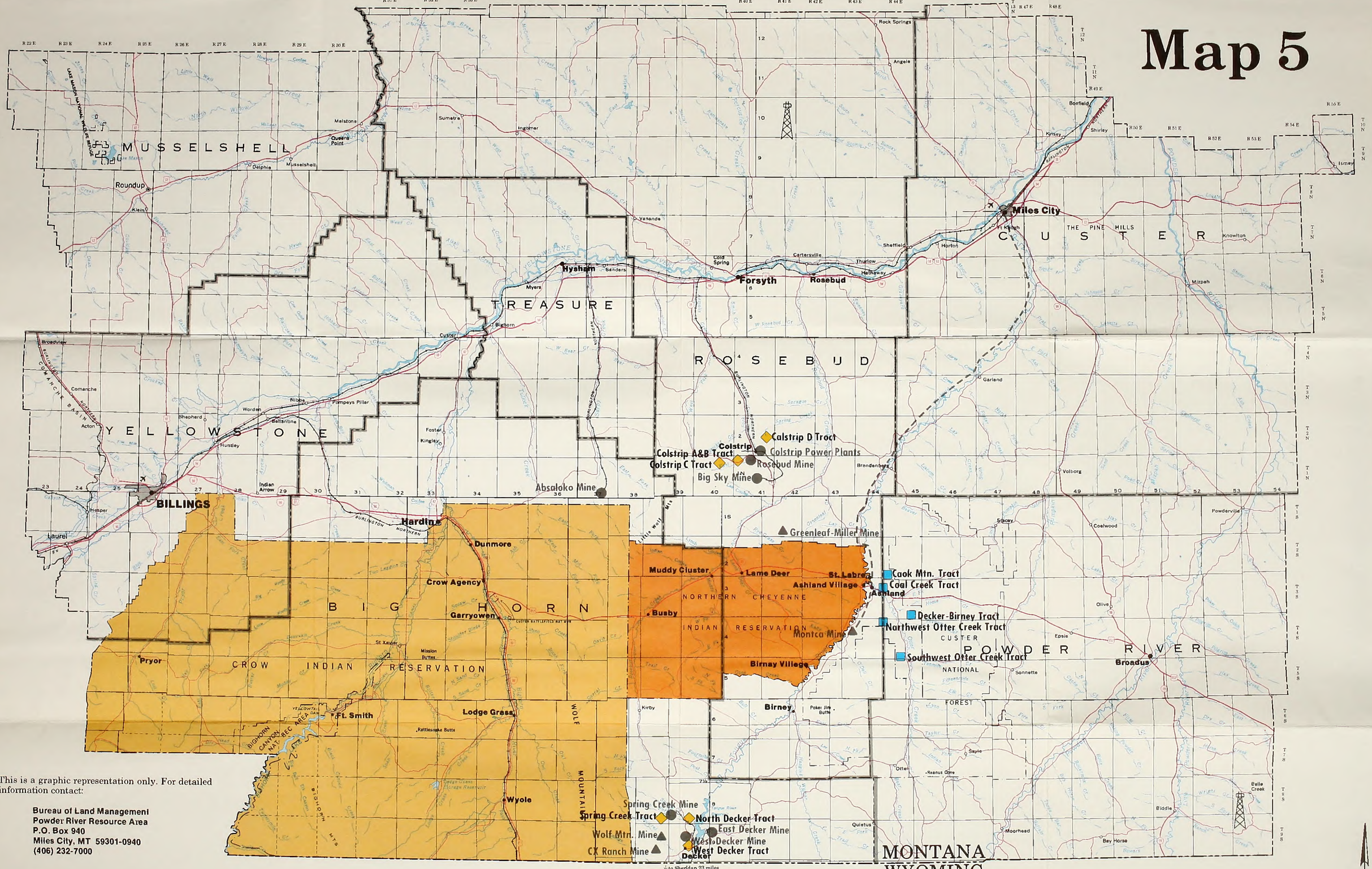
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Powder River Round I Coal EIS

Bureau of Land Management
1988

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1 inch equals approximately 8 miles

Map 5


MUSSELSHELL
YELLOWSTONE
TREASURE
ROSEBUD
CUSTER
THE PINE HILLS
BIG HORN
CROW INDIAN RESERVATION
NORTHERN CHEYENNE INDIAN RESERVATION
POWDER RIVER
CUSTER NATIONAL FOREST
BILLINGS
Miles City
Forsyth
Rosebud
Hysham
Hardin
Crow Agency
Garryowen
Lodge Grass
Wyola
Pryor
Ft. Smith
Busby
Lame Deer
Muddy Cluster
Ashland Village
Birney Village
Birney
Ashland
Colstrip
Absaloka Mine
Big Sky Mine
Rosebud Mine
Colstrip Power Plants
Colstrip A&B Tract
Colstrip C Tract
Colstrip D Tract
Greenleaf-Miller Mine
Cook Mtn. Tract
Coal Creek Tract
Decker-Birney Tract
Northwest Otter Creek Tract
Southwest Otter Creek Tract
Montco Mine
Spring Creek Mine
Spring Creek Tract
North Decker Tract
East Decker Mine
West Decker Mine
West Decker Tract
Wolf Mtn. Mine
CX Ranch Mine
Decker
Roundup
Melstone
Musselshell
Delphia
Queens Point
Sumatra
Ingomar
Rock Springs
Angela
Bonfield
Kinsey
Shirley
Ismay
Venanda
Cold Spring
Cartersville
Thurlow
Hathaway
Sheffield
Horton
Knowlton
Mizpah
Myers
Sanders
Custer
Bighorn
Broadview
Comanche
Nibbe
Pompeys Pillar
Worden
Shepherd
Bellantine
Acton
Huntley
Foster
Kingley
Garland
Brandenberg
Volborg
Indian Arrow
Hesper
Laurel
Dunmore
St Xavier
Mission Buttes
Rattlesnake Butte
Kirby
Poker Jim Butte
Saylie
Otter
Reanus Corner
Quietus
Moorhead
Bay Horse
Biddle
Belle Creek
Sucey
Coalwood
Powderville
Olive
Epsie
Sonnette
Broadus
Big Horn Canyon Nat. Rec. Area
Wolf Mountains
Big Horn Mts
Little Wolf Mts
Northern Pacific
Burlington Northern
Yellowstone
Big Horn
Little Wolf
Rosebud
Sarpy Creek
Tullock
Prairie Dog
Hay
Pumpkin
Lame Deer
Ashland
Olive
Epsie
Sonnette
Broadus
Biddle
Belle Creek
Moorhead
Bay Horse
Quietus
Saylie
Otter
Kirby
Birney
Decker
Wolf Mtn. Mine
CX Ranch Mine
Spring Creek Mine
Spring Creek Tract
North Decker Tract
East Decker Mine
West Decker Mine
West Decker Tract
Montco Mine
Cook Mtn. Tract
Coal Creek Tract
Decker-Birney Tract
Northwest Otter Creek Tract
Southwest Otter Creek Tract
Colstrip A&B Tract
Colstrip C Tract
Colstrip D Tract
Colstrip
Colstrip Power Plants
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Absaloka Mine
Greenleaf-Miller Mine
Muddy Cluster
Lame Deer
St. Labre
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Ashland
Busby
Birney Village
Crow Agency
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Hardin
Dunmore
Pryor
Ft. Smith
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Billings
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